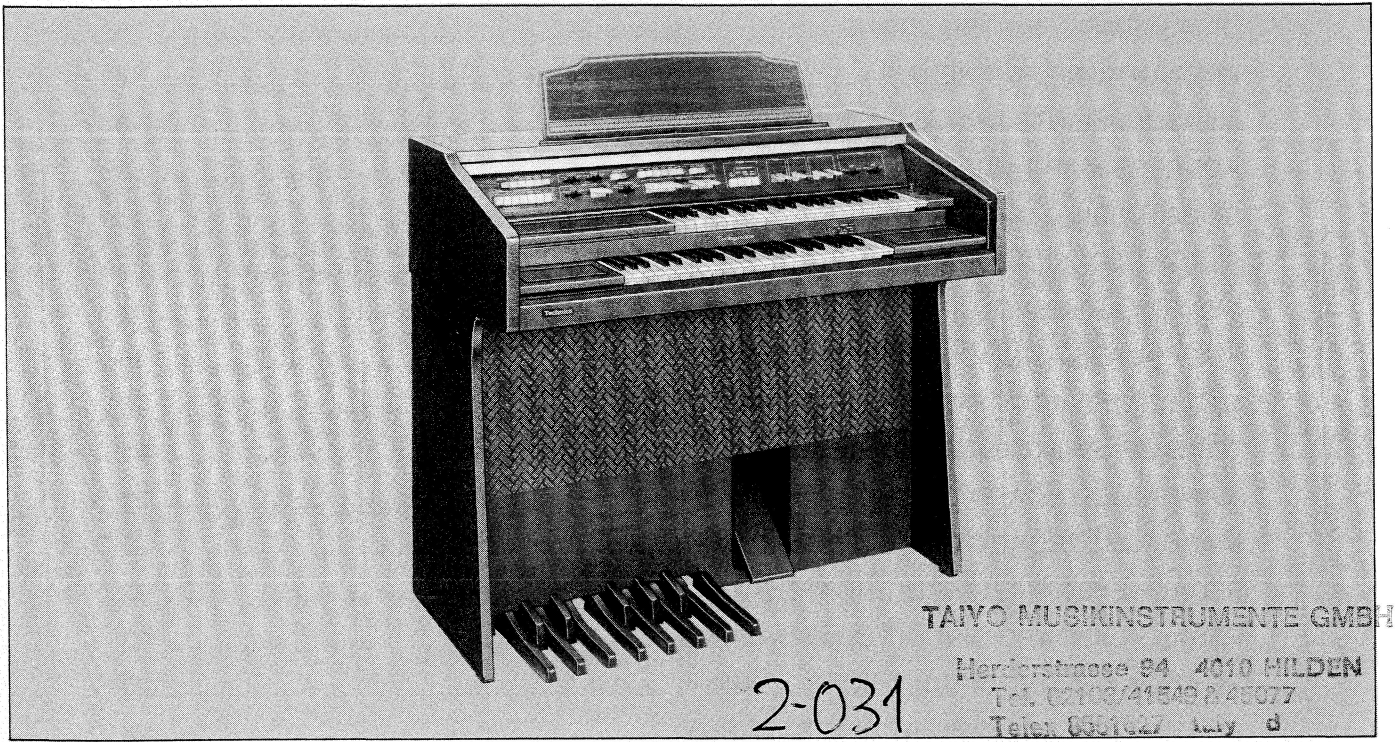
ORDER NO. EOS-80-1021

Service Manual

Electronic Organ

SX-U30



TAIYO MUSIKINSTRUMENTE GMBH
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2-031

Specifications

Keyboards	
• Upper Manual:	44 Keys $f \sim c^4$ ($3^2/_3$ Octaves)
• Lower Manual:	44 Keys $F \sim c^3$ ($3^2/_3$ Octaves)
•Pedal Keyboard:	13 Keys $C \sim c$ (1 Octave)
Conductor	
• Upper:	Tab Voices, Percussive Presets
Upper Tones	
• Tab Voices:	Flute 16′, 8′, 4′, 2′, Brass 16′, Oboe 8′, String 8′ Percussive Tone……4′
• Percussive Presets:	Piano, Harpsichord, Vibraphone
Lower Tones	
• Tab Voices:	Flute, Horn, Cello
Pedal Tones:	Bass 16′, 8′…Volume
Effects	
• Sustain (Tablet):	Upper Sustain
(Lever):	Upper Sustain, Pedal Sustain
• Vibrato:	On, Delay
• Tremolo:	Voice, Chorus/Tremolo
• Others:	Manual Balance
Techni-Chord	
Automatic Rhythm	
• Rhythm Selectors: (Rhythm A/B)	March/Rolling, Swing/Rumba, Rock/Slow Rock, Soul/Samba, Bossa Nova/Mambo, Waltz/Jazz Waltz
• Rhythm Controls:	Synchro Start, Start & Stop… Volume, Tempo
Fill-In:	Fill-In & Intro
Rhythmic Accompaniment:	Guitar, Loud
Auto-Play-Chord:	One Finger, Fingered, Memory, Cancel
Walking Bass	
Arpeggio:	Harp, Loud
Program Chord Computer:	Record, Recall, Reset, Forward Key, Back Key, End Key, Half Key, Whole key
Others:	Power Switch, Main Volume, Expression Pedal, Headphone Jack, Output Terminal, Microphone Jack (with Volume), Glide Control, Power Indicator
Maximum Output:	40W
Speakers:	30cm×1, 6.5cm×1
Power Consumption:	120W
Power Requirement:	AC 120/220/240V 50/60Hz AC 120V 60Hz Only for Canada
Cabinet:	112.6cm(W)×58.3cm(D)×97.9cm(H)
Net Weight: (without bench)	60kg

Technics

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

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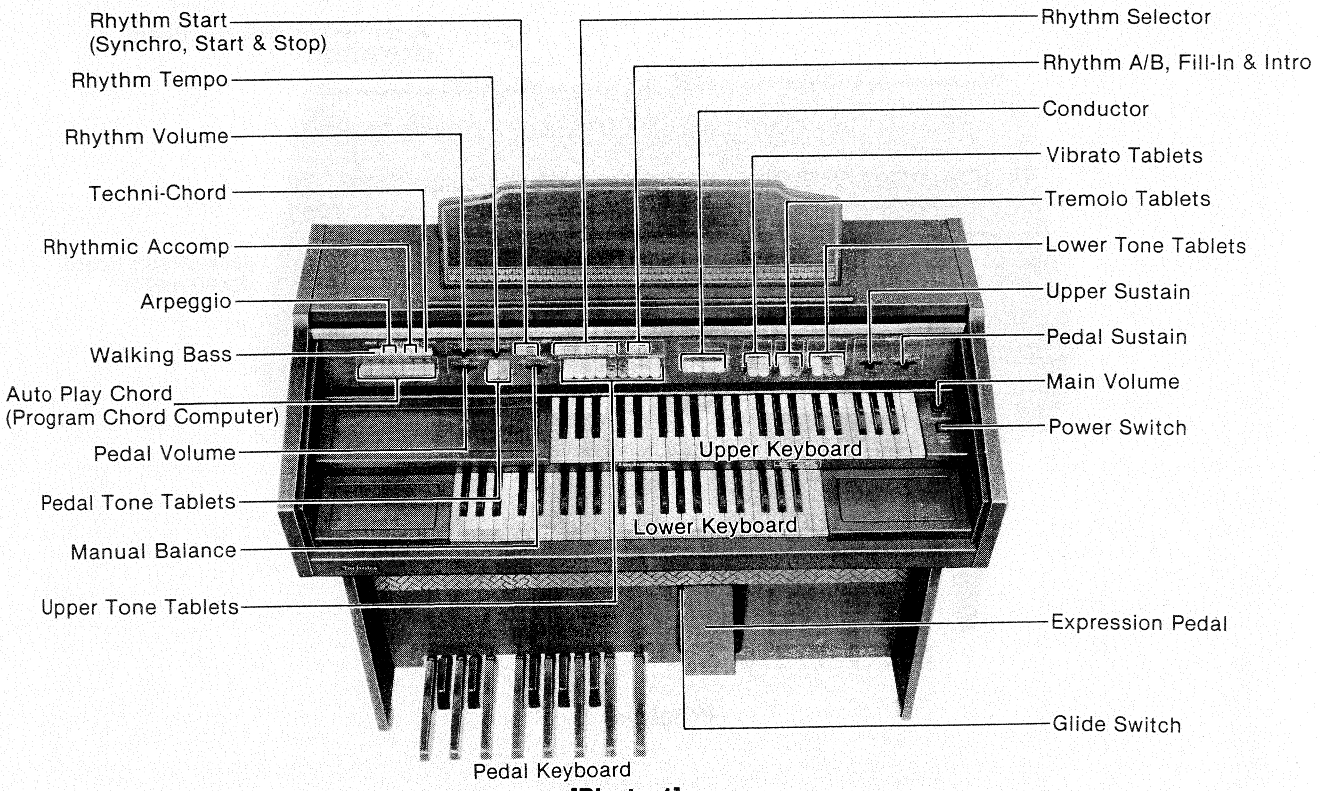
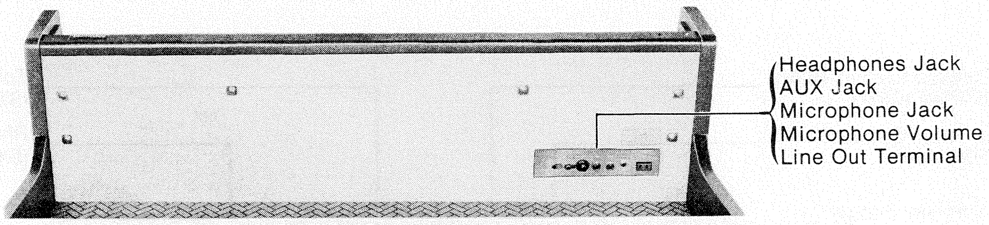
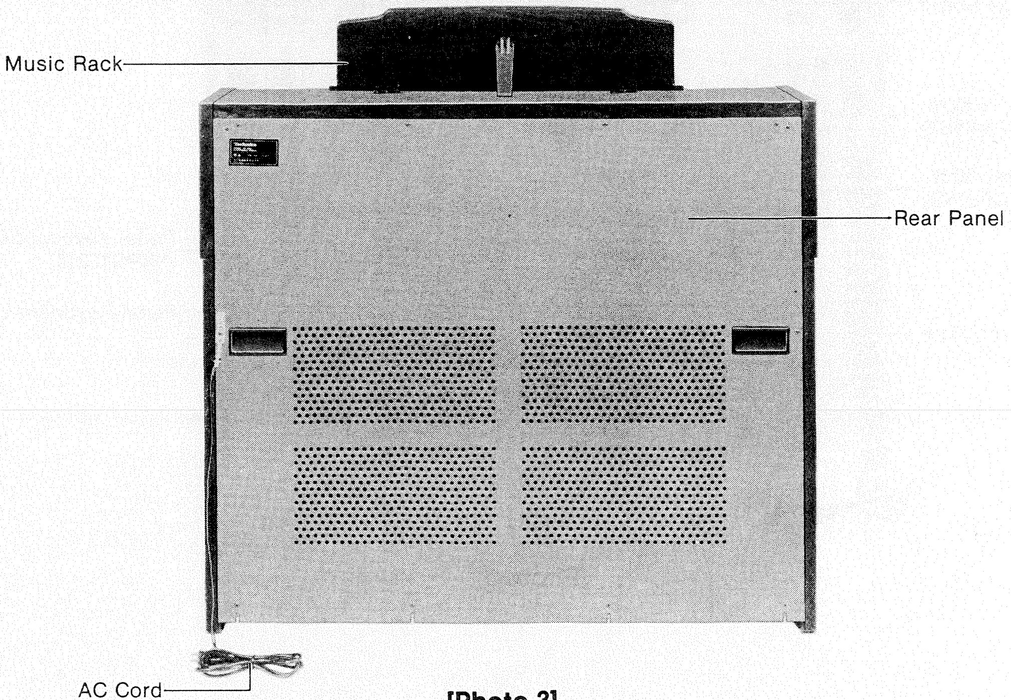
LOCATION OF CONTROLS


Rhythm Start
(Synchro, Start & Stop)
Rhythm Tempo
Rhythm Volume
Techni-Chord
Rhythmic Accomp
Arpeggio
Walking Bass
Auto Play Chord
(Program Chord Computer)
Pedal Volume
Pedal Tone Tablets
Manual Balance
Upper Tone Tablets
Rhythm Selector
Rhythm A/B, Fill-In & Intro
Conductor
Vibrato Tablets
Tremolo Tablets
Lower Tone Tablets
Upper Sustain
Pedal Sustain
Main Volume
Power Switch
Upper Keyboard
Lower Keyboard
Expression Pedal
Glide Switch
Pedal Keyboard

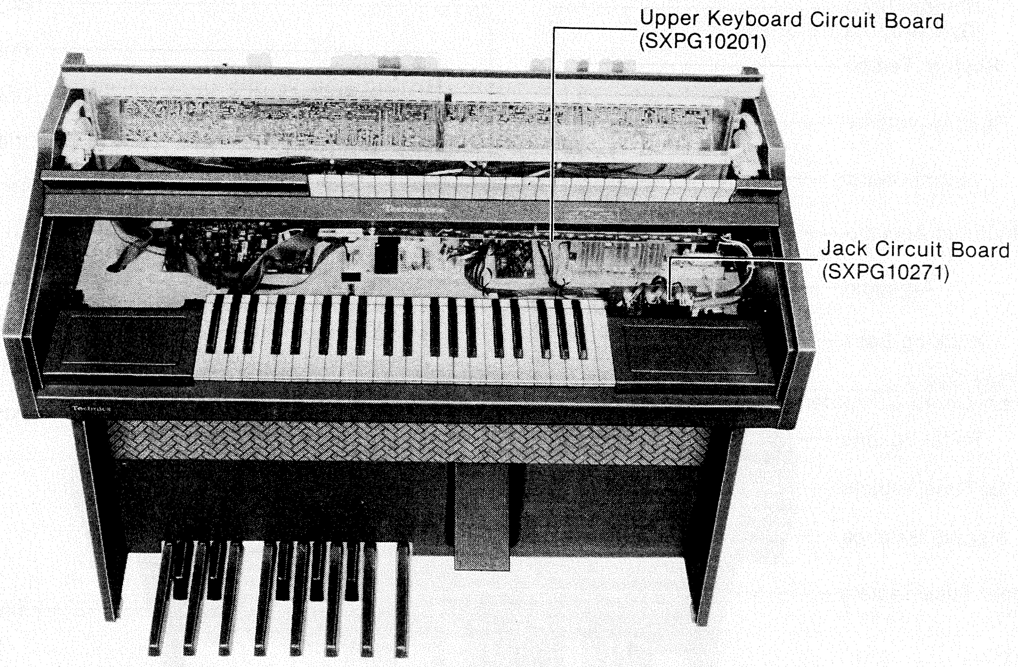
[Photo-1]


Headphones Jack
AUX Jack
Microphone Jack
Microphone Volume
Line Out Terminal

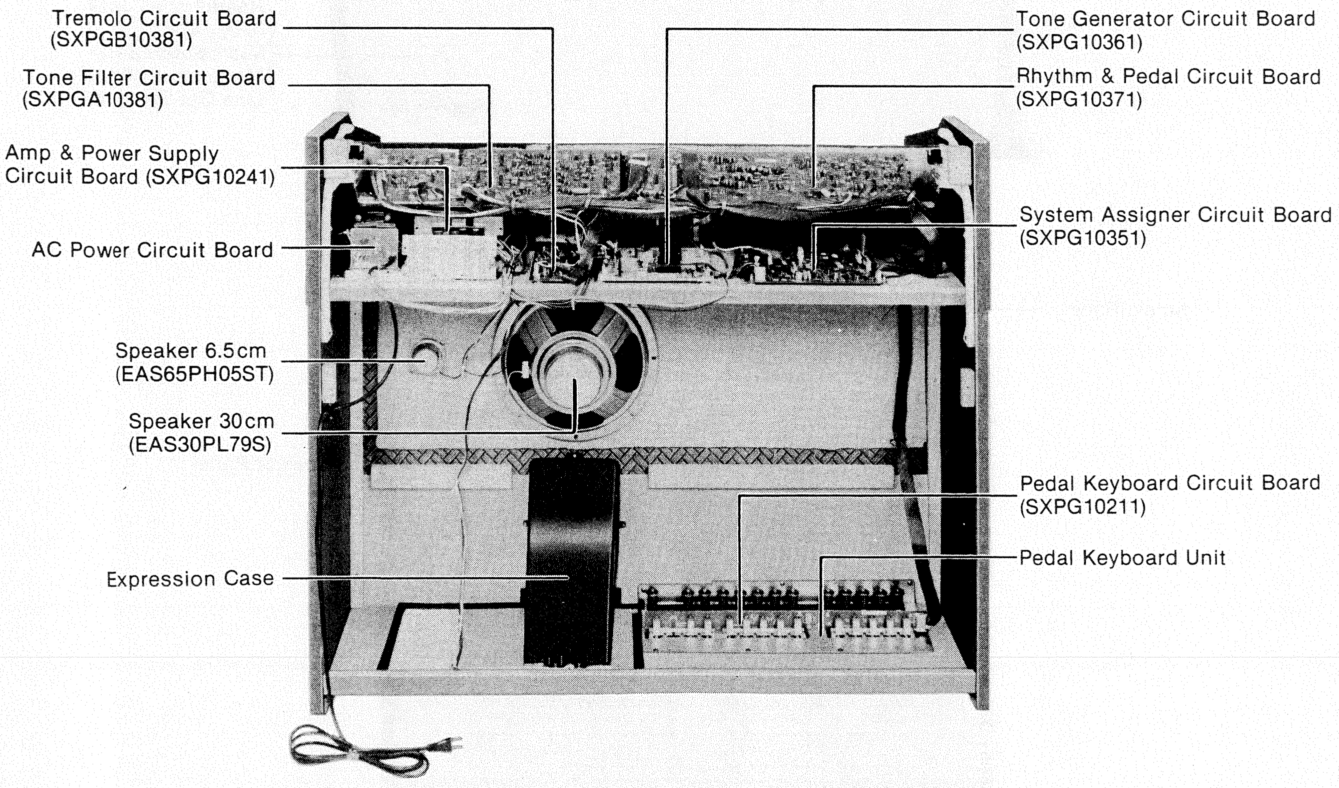
[Photo-2]


Music Rack
Rear Panel
AC Cord

[Photo-3]


Upper Keyboard Circuit Board
(SXPG10201)
Jack Circuit Board
(SXPG10271)

[Photo-4]

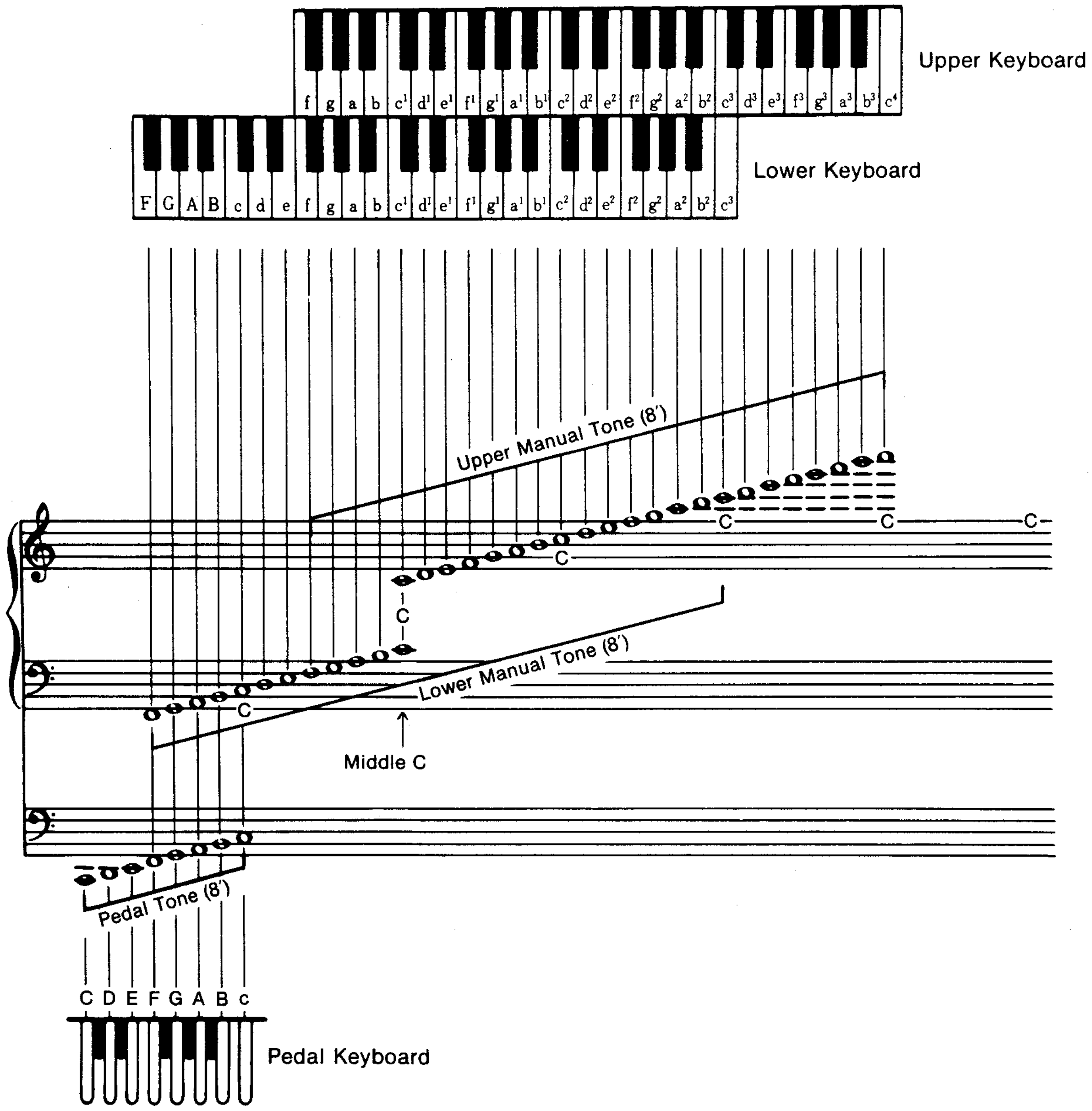

Tremolo Circuit Board
(SXPGB10381)
Tone Filter Circuit Board
(SXPGA10381)
Amp & Power Supply
Circuit Board (SXPG10241)
AC Power Circuit Board
Speaker 6.5cm
(EAS65PH05ST)
Speaker 30cm
(EAS30PL79S)
Expression Case
Tone Generator Circuit Board
(SXPG10361)
Rhythm & Pedal Circuit Board
(SXPG10371)
System Assigner Circuit Board
(SXPG10351)
Pedal Keyboard Circuit Board
(SXPG10211)
Pedal Keyboard Unit

[Photo-5]

KEYBOARD RANGES

Upper Keyboard	44 Keys	f to c^4 ($3^2/_3$ Octaves)
Lower Keyboard	44 Keys	F to c^3 ($3^2/_3$ Octaves)
Pedal Keyboard	13 Keys	C to c (1 Octave)

※ An 8-feet compass is used for each keyboard.



Upper Keyboard
f g a b c¹ d¹ e¹ f¹ g¹ a¹ b¹ c² d² e² f² g² a² b² c³ d³ e³ f³ g³ a³ b³ c⁴
Lower Keyboard
F G A B c d e f g a b c¹ d¹ e¹ f¹ g¹ a¹ b¹ c² d² e² f² g² a² b² c³
Upper Manual Tone (8')
C
C
C
C
C
Lower Manual Tone (8')
Middle C
Pedal Tone (8')
C D E F G A B c
Pedal Keyboard

DISASSEMBLY INSTRUCTIONS

1. Top Cover

(a) Remove the 2 setscrews Ⓐ located on the right and left sides of the top cover.

(b) Remove the 2 setscrews Ⓑ and 4 setscrews Ⓒ located on the rear panel.

(c) The top cover can be removed upwards.

2. Sliding Cover

(a) After removing the top cover, remove the sliding cover in its fully-closed position.

3. Rear Panel

(a) Remove the 10 setscrews Ⓒ to detach the rear panel.

4. Control Panel

(a) Remove both top cover and sliding cover according to procedure 1 and 2.

(b) Remove the 2 setscrews Ⓓ at both sides of the control panel. Then the control panel can be opened upwards.

5. Upper Keyboard

(a) Open the control panel according to procedure 1, 2 and 4.

(b) Remove the 2 setscrews Ⓔ on the bottom of the shelf-board.

(c) Then the upper keyboard can be opened upwards.

6. Lower Keyboard

(a) Open the upper keyboard according to procedure 5.

(b) Remove the 4 setscrews Ⓕ on the bottom of the shelf-board.

(c) Then the lower keyboard can be opened upwards.

7. External Jack

(a) Open the upper keyboard according to procedure 5.

(b) Remove the 3 setscrews Ⓖ which secure the chassis of the jack. Then, the external jack can be removed.

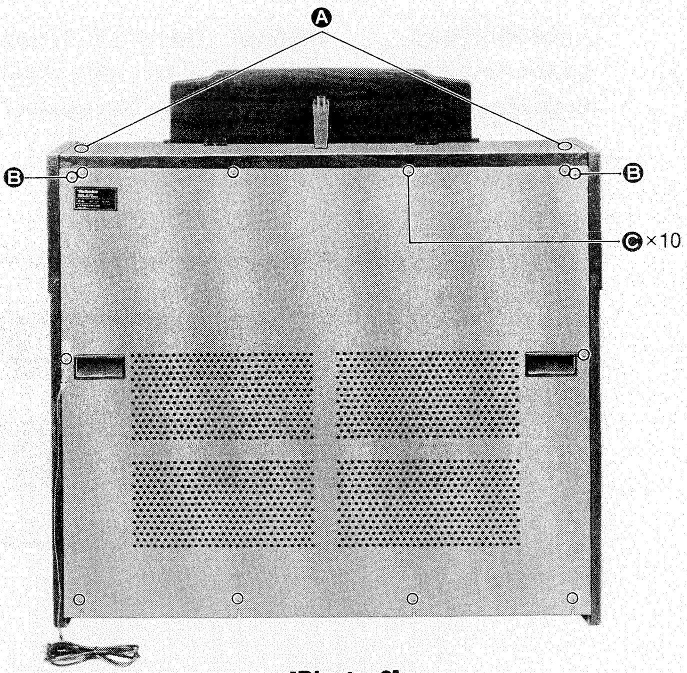
8. Expression Unit

(a) Remove the rear panel according to procedure 3.

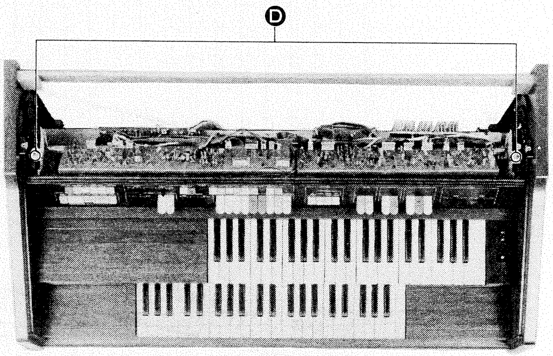
(b) Remove the 3 setscrews which secure the expression case. The expression case can be removed.

(c) The expression unit can be detached by removing the 4 setscrews Ⓗ.

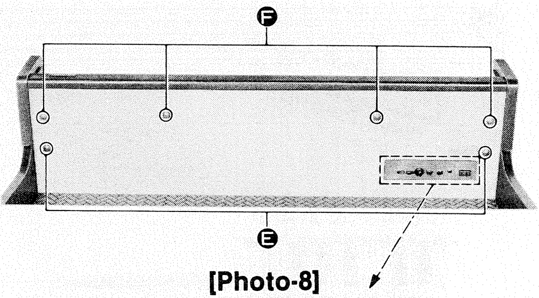
(d) When replacing the expression lamp, remove the lamp retainer rubber and detach the lamp from the socket.



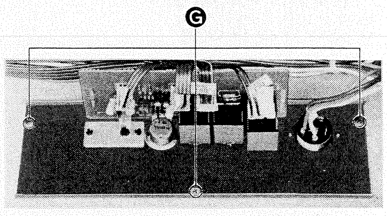
[Photo-6]



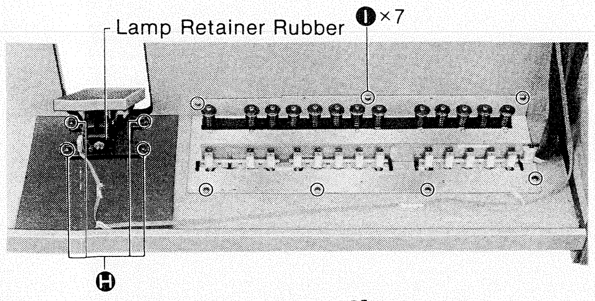
[Photo-7]



[Photo-8]



[Photo-9]



[Photo-10]

9. Pedal Keyboards

(a) Remove the rear panel according to procedure 3.

(b) Remove the 7 setscrews ❶ which secure the pedal keyboard chassis.

(c) Lift the cabinet body, and remove the pedal keyboard from the bottom plate of the cabinet.

10. Removing Manual Keys

(a) Open the manual keyboard according to procedure 5 and 6.

(b) As shown in Fig.-1, introduce the key-remover tool vertically between the notches of the manual key that is going to be removed. Move the key-remover tool in the keyboard direction until the notches move enough to disengage from the chassis holes. (The black keys may be removed, after the white keys to either side have been removed, by pulling the front part of the key.)

★ If the key-remover tool is not available, the key can be removed by pulling the front part of the key and disengaging it from the chassis while spreading each notched leg outwards.

11. Installation of Manual Keys

(a) Mount spring "A" on the keyboard chassis.

(b) Set the key into the key guide and the actuator into the hole in the chassis.

(c) Press the key in the direction indicated by Ⓑ in Fig.-2 so that the key pushes down on the spring "A".

(d) While pushing in direction Ⓑ, pull key towards you so that the key notches engage in the chassis holes.

(e) The key is correctly installed when the notches of the key are engaged in the chassis holes.

12. Manual Keyboard Switch Unit

(a) Remove the setscrews of the switch unit on the back of the manual keyboard.

(b) Unsolder the printed board and pull out the switch unit.

13. Control Knobs, Buttons

(a) All knobs and buttons can be pulled out. (It is advisable to use a string to remove knobs and buttons.)

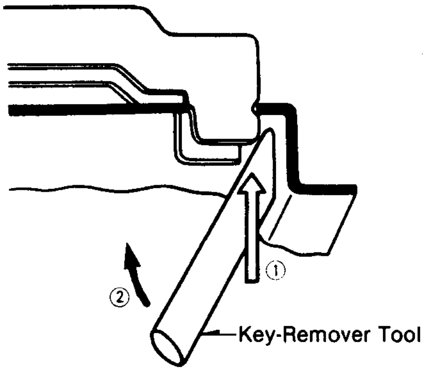
14. Tang Switch Levers

(a) Open the control panel according the procedure 4.

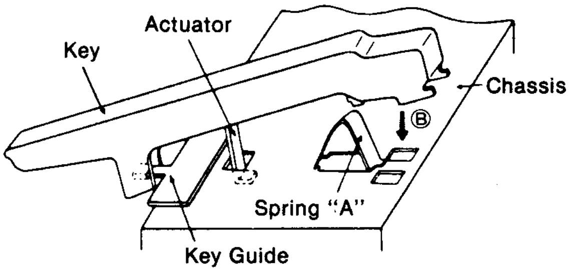
(b) Remove the printed circuit board on the back of the control panel.

(c) Shift the tang switch lever down, and remove the damper.

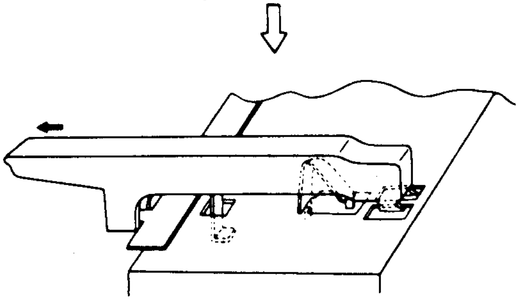
(d) Remove the spring, and the lever from the chassis.



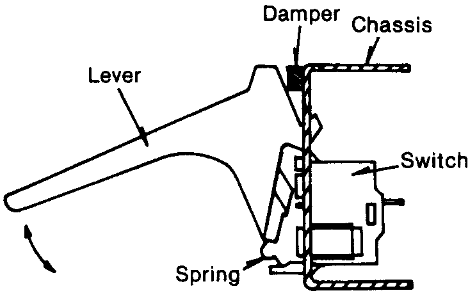
[Fig.-1]



[Fig.-2]



[Fig.-3]



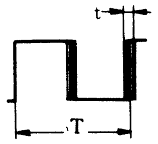
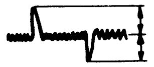
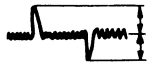
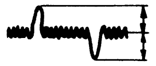
[Fig.-4]

PRECAUTIONS FOR REPAIR

■ Troubles often occur due to faulty operation of your electronic organ if you are not completely familiar with its mechanisms. Therefore, if your organ shows the following symptoms, please check the instrument before repair.

Symptoms	Causes and Measures
Bass is high-pitched, and treble is low-pitched.	Electronic organs are tuned by integral overtones since the overtone composition is integer-multiple. However, human ears feel the bass of pedal keyboard a little higher-pitched, and the treble of upper keyboard a little lower-pitched.
No sound is produced upper keyboard tone tablets.	No sound is produced if the "tab voices" button of the conductor is OFF position. Push the ON position of the "tab voices" button.
Pedal keyboard or rhythm produce no sound.	Control knobs are provided for producing these sounds. No sound is produced with the knobs set an "0". Set them to the desired volume positions.
Neither lower keyboards nor pedal keyboard produces sound.	If the "recall" button is turned on while no chord is memorized in the program chord computer, neither lower keyboard nor pedal keyboard produces sound. Turn off the "recall" button by pushing the "cancel" button.
Only 8 tones are produced when 9 or more keys of the upper keyboard or lower keyboard are simultaneously pressed.	It is designed so that the upper and lower keyboards can produce only up to 8 tones necessary for playing. The 8 keys are given priority over high-pitched tones.
The highest tone of flute 2′ become lower tones.	The highest tone (C6 key) of flute 2′ is 1 ocave lower tones.
Pedal keyboard and/or lower keyboard keep sounding.	This trouble occurs when either "one-finger" or "fingered" button of the auto play chord, and "memory" button are turned on. Set the "memory" button to OFF.
When two keys of pedal keyboard are pressed at the same time, only one tone is produced.	If the pedal keyboard keys are depressed fast, the produced sound becomes flat due to mixture of tones. To prevent this, it is designed so that the previous tone is cancelled on depression of other key. When two or more keys are depressed simultaneously, the lowest tone will be produced. (Bass priority).
Tone tablet sound is not given vibrato even when vibrato tablet is activated.	In conductor switches, when other than tab voices are activated, the vibrato tablet automatically becomes ineffective so that the instrument is kept in optimum conditions.
Manual balance lever does not work for percussive presets.	The lever is set so that it is most effective when used individually or in combination.
Fill-in seems to be out of order.	It is because "fill-in" is given instantaneously when the "fill-in and intro" button is turned on. However, there is no chance of getting out of order because "fill-in" is terminated at the end of a bar.
During auto accompaniment, sounds other than the rhythmic accompaniment are not played in rhythm.	It is because the sounds are given more orchestral effects in this way.
Nothing is stored in the memory when program chord computer is used.	• Check that the "record" button is on. Pushing the "one-finger" or "fingered" button causes the "record" button to turn off, making it impossible to memorize. • Do not release the left hand (chord) before pushing the "whole" or "half" key.

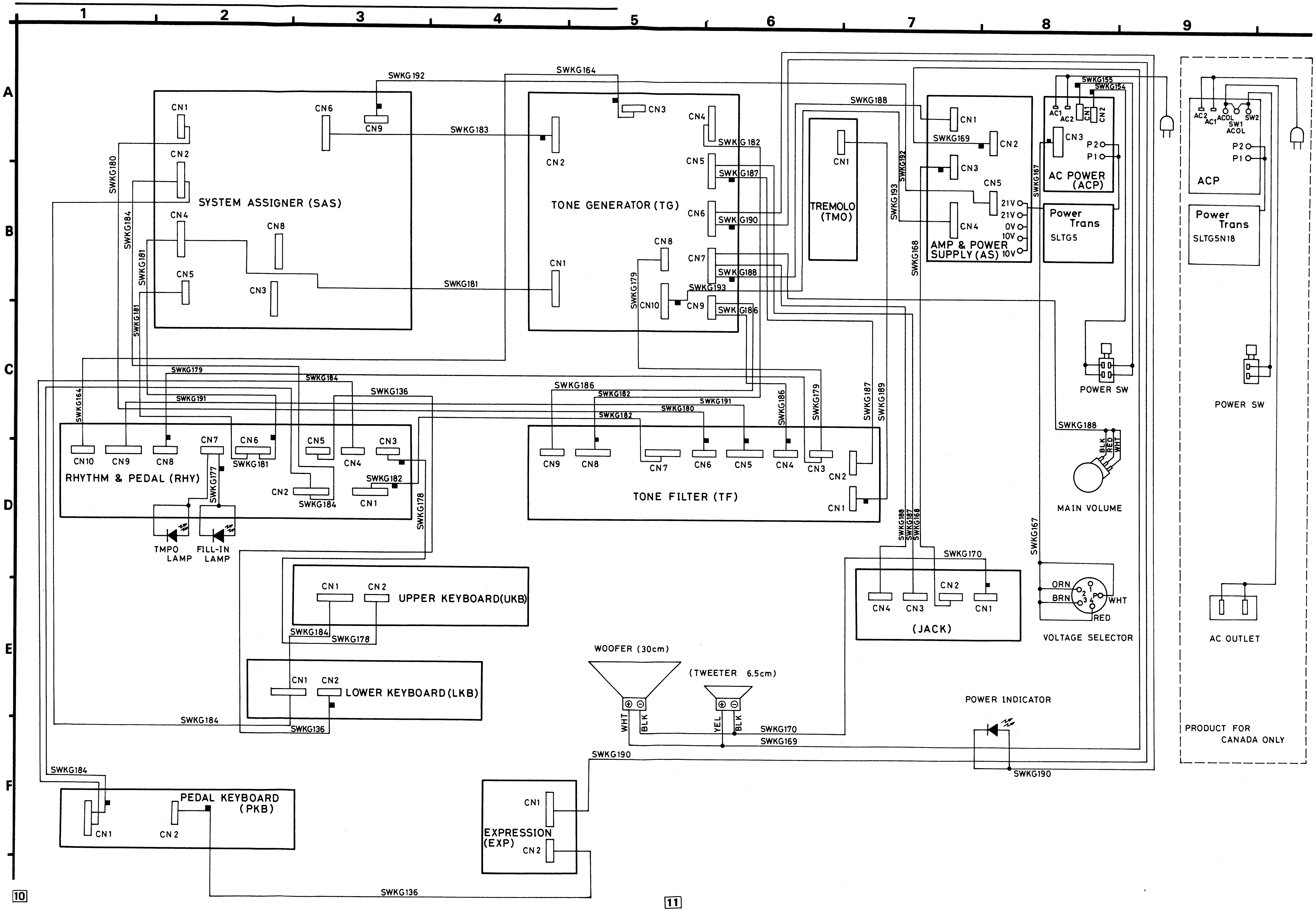
MEASUREMENTS AND ADJUSTMENTS

ADJUSTMENT	SETTING	METER USED	ADJUSTMENT CIRCUIT BOARD	ADJ. POINT	CONNECT METER TO	METER READING
Tuning	conductor ....tab voices upper tone tab ....flute 8′ upper keyboard ....A3 key	Frequency counter	System Assigner Circuit	L1	30cm Speaker	440±1Hz
Vibrato speed	vibrato tab ....on	Oscilloscope	System Assigner Circuit	VR1	IC2 ① pin	6±0.5Hz
Vibrato depth	vibrato tab ....on	Oscilloscope	System Assigner Circuit	VR2	Q4 collector	2.5% (t/T)
	Connect the oscilloscope to Q4 collector of the system assigner circuit. Adjust VR2 so that the periodical alteration (t) with vibrato turned on is 2.5% assuming that period (T) of the rectangular wave on the oscilloscope is 100%.					
Output level (Manual)	conductor ....tab voices upper tone tab ....flute 16′ flute 8′ flute 4′ manual balance.........upper main volume ....max expression pedal ......max upper keyboard C3, E3, G3	High impedance voltmeter (VTVM)	Tone Filter Circuit	VR2	30cm Speaker	3±0.3Vrms
Output level (Pedal)	pedal tone tab ....bass 8′ main volume ....max expression pedal ......max pedal volume ....max pedal sustain ....short pedal keyboard ....A1 key	High impedance voltmeter (VTVM)	Rhythm & Pedal Circuit	VR3	30cm Speaker	5±0.5Vrms
Percussive tone click adjustment	conductor ....tab voices main volume ....max expression pedal ......max manual balance.........upper upper keyboard ....on/off (repeating)	Oscilloscope	Tone Filter Circuit	VR1	30cm Speaker	Under 30mVpp 
	Adjust VR1 so that the click wave form on the oscilloscope is minimized when the upper keyboard is turned on/off.					
Rhythmic accomp click adjustment	rhythm.....................start rhythm volume ....min main volume ....max expression pedal ......max	Oscilloscope	Tone Filter Circuit	VR3	30cm Speaker	Under 30mVpp 
	Adjust VR3 so that the click waveform on the oscilloscope is minimized.					
Fill-in click adjustment	rhythm volume ....min main volume ....max expression pedal ......max auto play chord SW ...one finger rhythm.....................start fill-in switch ....on	Oscilloscope	Tone Filter Circuit	VR4	30cm Speaker	Under 30mVpp 

ADDRESS MAP TABLE

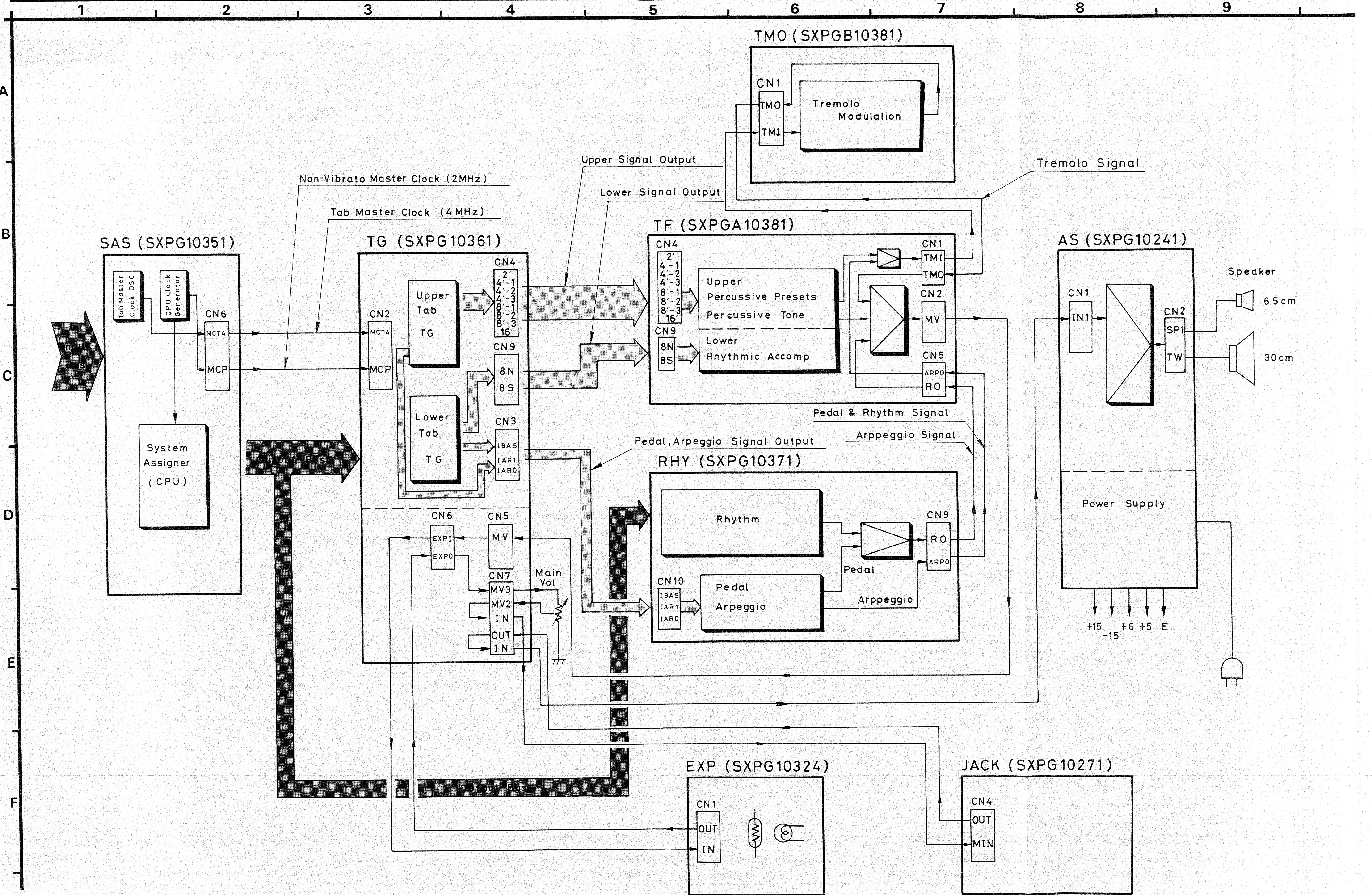
ADDRESS		SITUATION OF DECODER	BUS INPUT/OUTPUT	INPUT/OUTPUT BUS NUMBER						REMARKS
				I/O B5	I/O B4	I/O B3	I/O B2	I/O B1	I/O B0	
0	0	MKB (upper)	IN	C6						upper keyboard
	1			F#5	G5	G#5	A5	A#5	B5	
	2			C5	C#5	D5	D#5	E5	F5	
	3			F#4	G4	G#4	A4	A#4	B4	
	4			C4	C#4	D4	D#4	E4	F4	
	5			F#3	G3	G#3	A3	A#3	B3	
	6			C3	C#3	D3	D#3	E3	F3	
	7			F#2	G2	G#2	A2	A#2	B2	
	8	RHY	IN						F2	
	9			march	rock		swing	bossa nova	soul	rhythm selector
	A			waltz	slow rock		rumba	mambo	samba	
	B									
	C					fill-in & intro		rhythm A/B		rhythm control
	D		OUT	bass drum	snare drum	hi-hat (accent)	rhythmic accomp short	long	hi-hat (closed)	rhythm output
	E			maracas	rimshot/claves	high bongo	low bongo	low canga	cow bell	
	F			low conga/claves	snar drum rolling	cavasa	hi-hat (opened)	fill-in lamp	tempo lamp	
1	0	MKB (lower)	IN	C5						lower keyboard
	1			F#4	G4	G#4	A4	A#4	B4	
	2			C4	C#4	D4	D#4	E4	F4	
	3			F#3	G3	G#3	A3	A#3	B3	
	4			C3	C#3	D3	D#3	E3	F3	
	5			F#2	G2	G#2	A2	A#2	B2	
	6			C2	C#2	D2	D#2	E2	F2	
	7			F#1	G1	G#1	A1	A#1	B1	
	8	RHY	IN						F1	
	9			C2			start & stop SW.	synchro switch	glide switch	rhythm start pedal keyboard
	A			F#1	G1	G#1	A1	A#1	B1	
	B			C1	C#1	D1	D#1	E1	F1	
	C					decay			sustain	upper envelope control
	D									
	E					record	fingered	one-finger	recall	auto-play-chord control
	F			techni-chord		normal bass	memory		reset	
3	0……E	SAS	OUT							
	F				upper key down	busy				key down status

SX-U30 WIRING DIAGRAM



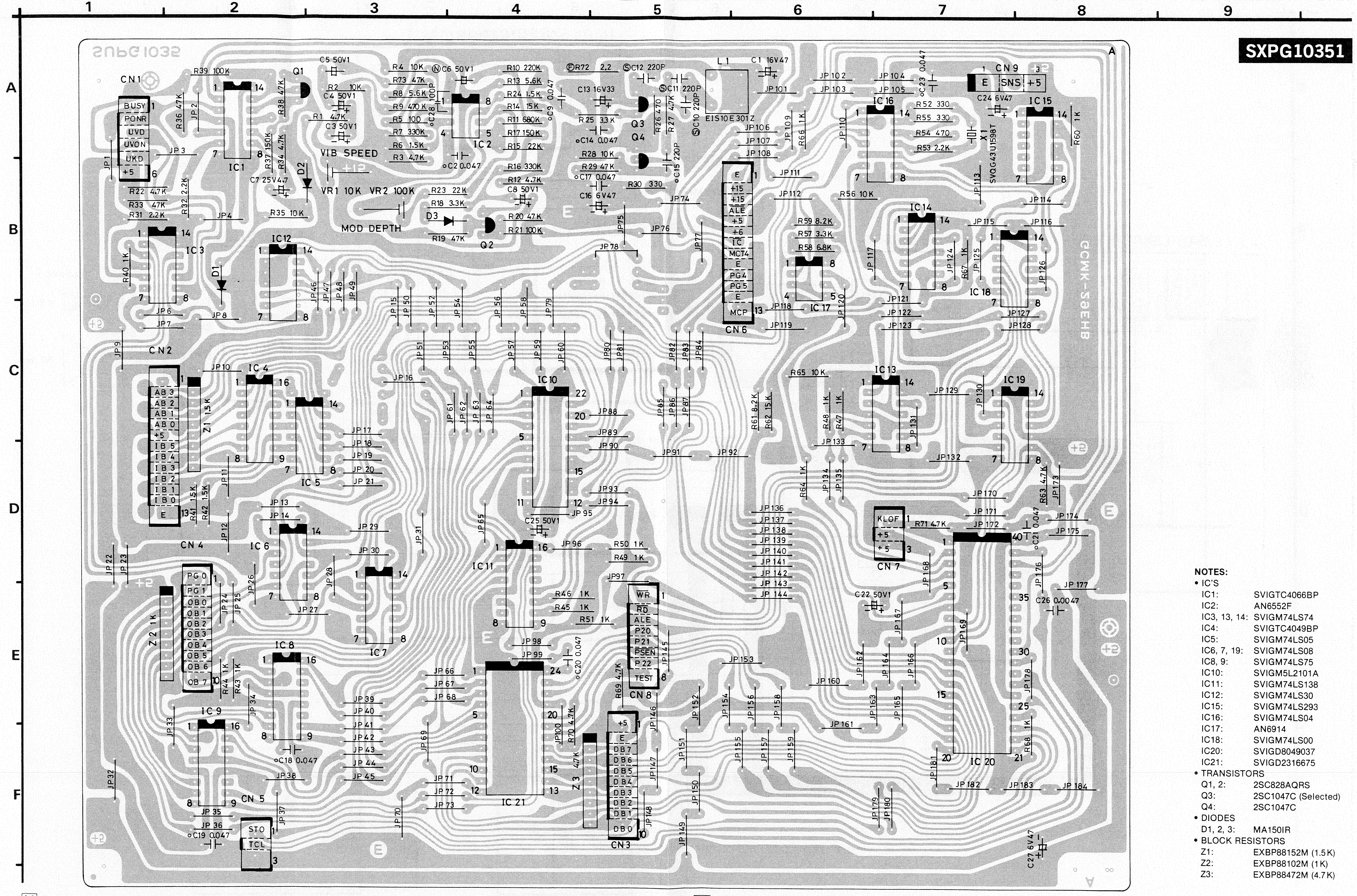
1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
SYSTEM ASSIGNER (SAS)
CN1
CN2
CN4
CN5
CN6
CN9
CN8
CN3
SWKG192
SWKG164
SWKG183
SWKG180
SWKG184
SWKG181
SWKG181
TONE GENERATOR (TG)
CN3
CN2
CN4
CN5
CN6
CN7
CN8
CN1
CN10
CN9
SWKG182
SWKG187
SWKG190
SWKG188
SWKG193
SWKG186
SWKG179
TREMOLO (TMO)
CN1
SWKG188
SWKG192
SWKG193
SWKG168
AMP & POWER SUPPLY (AS)
CN1
SWKG169
CN2
CN3
CN5
CN4
21V
21V
0V
10V
10V
SWKG167
AC POWER (ACP)
AC1
AC2
CN1
CN2
CN3
P2
P1
SWKG155
SWKG154
Power Trans
SLTG5
ACP
AC2
AC1
ACOL
SW1
ACOL
SW2
P2
P1
Power Trans
SLTG5N18
POWER SW
POWER SW
SWKG179
SWKG184
SWKG191
SWKG136
SWKG164
CN10
CN9
CN8
CN7
CN6
SWKG181
CN5
CN4
CN3
SWKG182
CN2
SWKG184
CN1
RHYTHM & PEDAL (RHY)
SWKG177
SWKG178
TMPO LAMP
FILL-IN LAMP
SWKG186
SWKG182
SWKG182
SWKG180
SWKG191
SWKG186
SWKG179
SWKG187
SWKG189
CN9
CN8
CN7
CN6
CN5
CN4
CN3
CN2
CN1
TONE FILTER (TF)
SWKG188
BLK
RED
WHT
MAIN VOLUME
SWKG188
SWKG187
SWKG168
SWKG170
CN4
CN3
CN2
CN1
(JACK)
SWKG167
ORN
BRN
WHT
RED
VOLTAGE SELECTOR
AC OUTLET
CN1
CN2
UPPER KEYBOARD(UKB)
SWKG184
SWKG178
CN1
CN2
LOWER KEYBOARD (LKB)
SWKG184
SWKG136
WOOFER (30cm)
(TWEETER 6.5cm)
WHT
BLK
YEL
BLK
SWKG170
SWKG169
POWER INDICATOR
SWKG190
SWKG190
PRODUCT FOR CANADA ONLY
SWKG184
PEDAL KEYBOARD (PKB)
CN1
CN2
EXPRESSION (EXP)
CN1
CN2
SWKG136

SX-U30 BLOCK DIAGRAM


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
TMO (SXPGB10381)
CN1
TMO
TMI
Tremolo Modulation
Upper Signal Output
Lower Signal Output
Non-Vibrato Master Clock (2MHz)
Tab Master Clock (4MHz)
Tremolo Signal
SAS (SXPG10351)
Tab Master Clock OSC
CPU Clock Generator
CN6
MCT4
MCP
System Assigner (CPU)
Input Bus
Output Bus
TG (SXPG10361)
CN2
MCT4
MCP
Upper Tab TG
Lower Tab TG
CN4
2'
4'-1
4'-2
4'-3
8'-1
8'-2
8'-3
16'
CN9
8N
8S
CN3
IBAS
IAR1
IAR0
CN6
EXPI
EXPO
CN5
MV
CN7
MV3
MV2
IN
OUT
IN
Main Vol
TF (SXPGA10381)
CN4
2'
4'-1
4'-2
4'-3
8'-1
8'-2
8'-3
16'
CN9
8N
8S
Upper Percussive Presets Percussive Tone
Lower Rhythmic Accomp
CN1
TMI
TMO
CN2
MV
CN5
ARPO
RO
Pedal & Rhythm Signal
Arppeggio Signal
Pedal, Arpeggio Signal Output
RHY (SXPG10371)
Rhythm
CN9
RO
ARPO
Pedal
Arppeggio
CN10
IBAS
IAR1
IAR0
Pedal Arpeggio
AS (SXPG10241)
CN1
IN1
CN2
SP1
TW
Speaker
6.5cm
30cm
Power Supply
+15
−15
+6
+5
E
Output Bus
EXP (SXPG10324)
CN1
OUT
IN
JACK (SXPG10271)
CN4
OUT
MIN

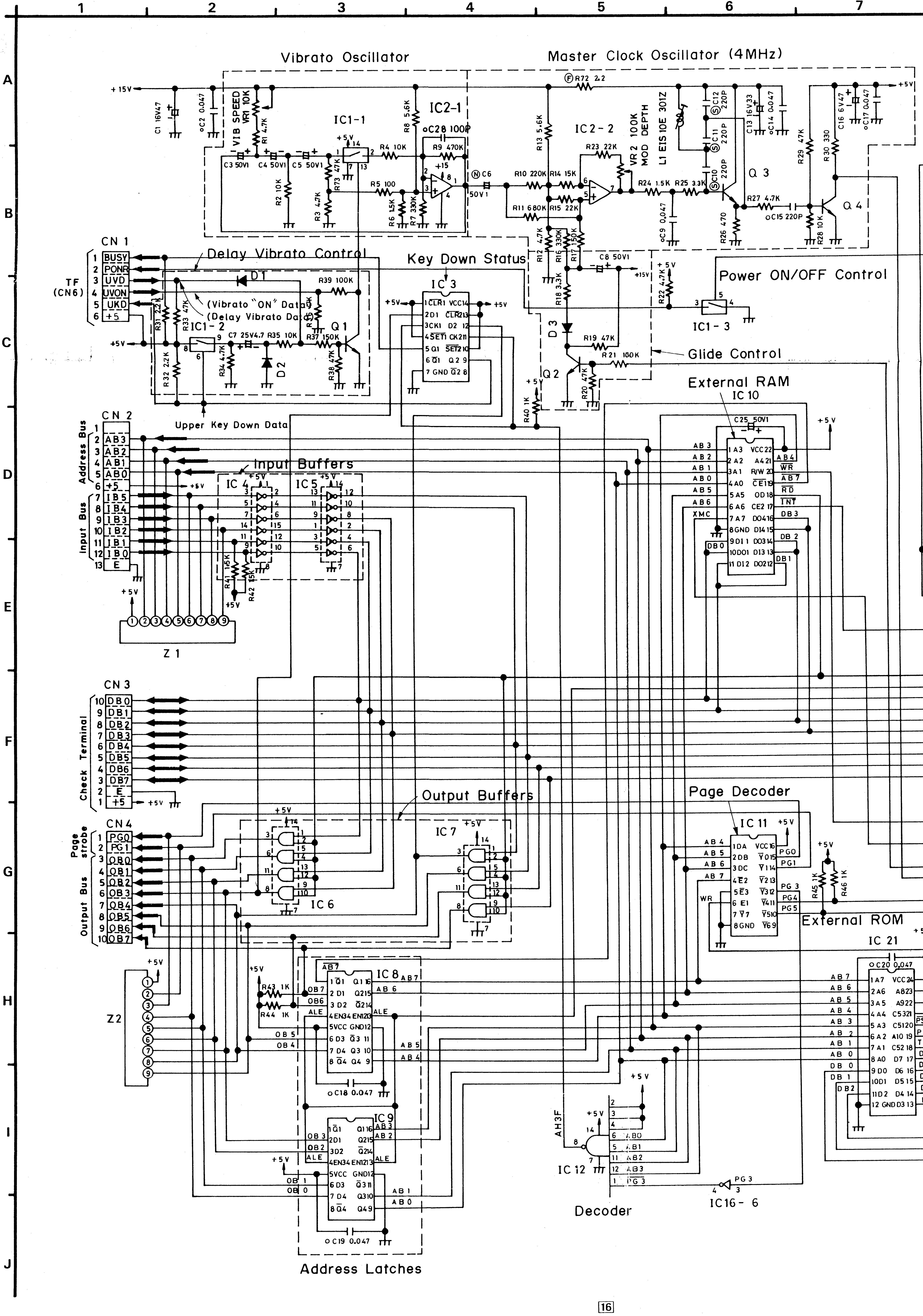
SYSTEM ASSIGNER CIRCUIT BOARD (SAS)

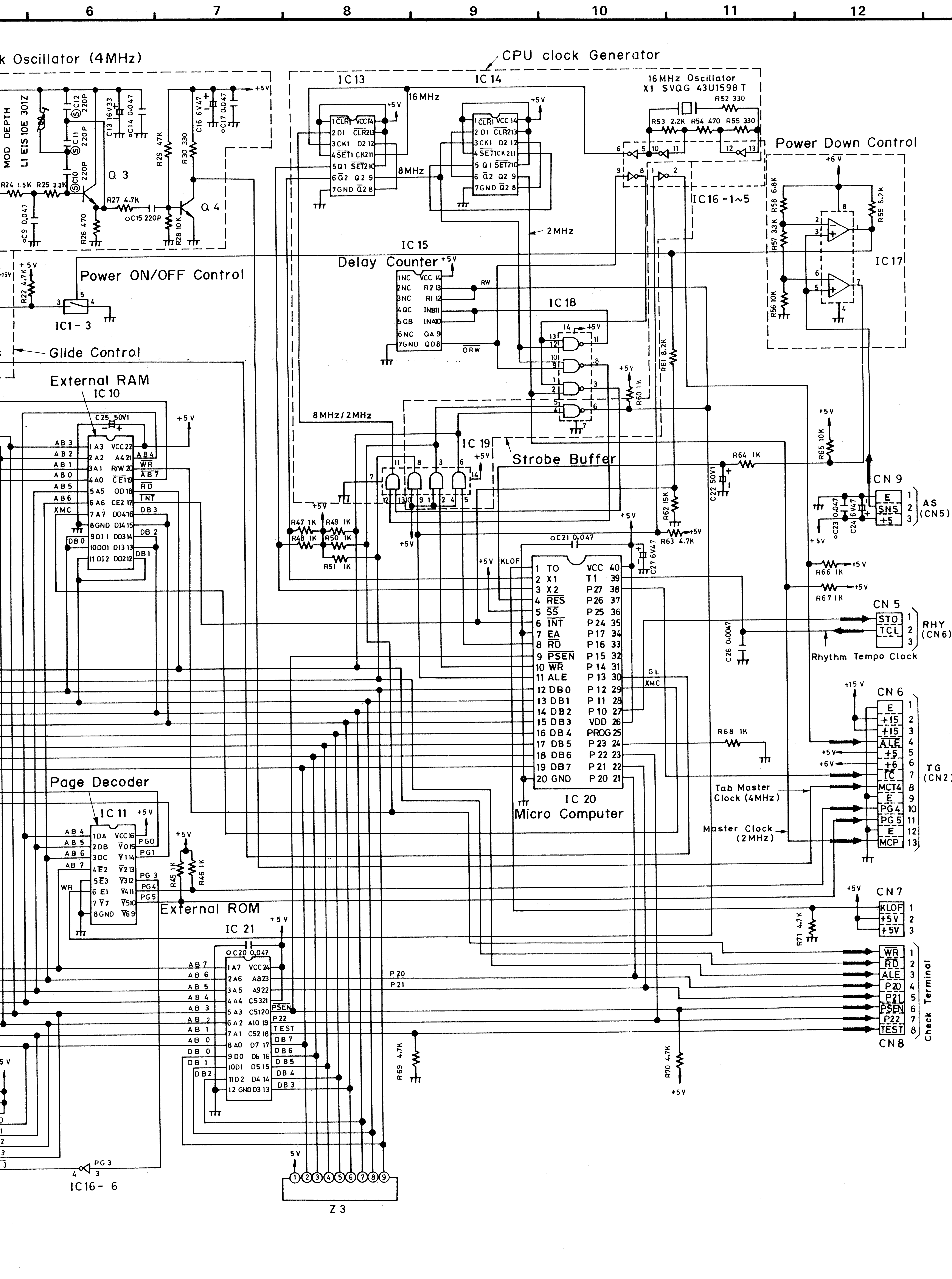
SXPG10351

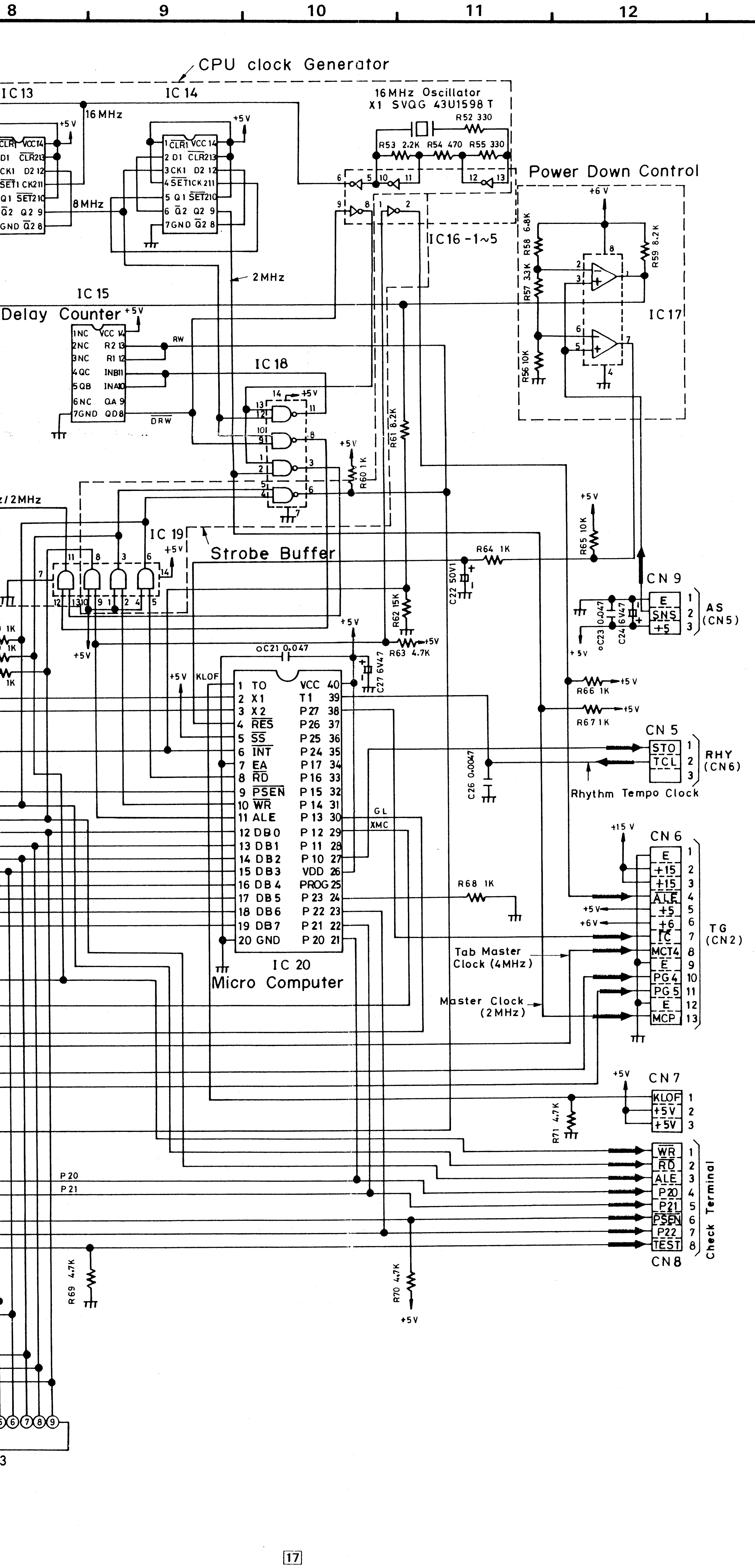

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
CN1
BUSY
PONR
UVD
UVON
UKD
+5
Q1
Q2
Q3
Q4
IC1
IC2
IC3
IC4
IC5
IC6
IC7
IC8
IC9
IC10
IC11
IC12
IC13
IC14
IC15
IC16
IC17
IC18
IC19
IC20
IC21
CN2
CN3
CN4
CN5
CN6
CN7
CN8
CN9
VIB SPEED
MOD DEPTH
VR1 10K
VR2 100K
D1
D2
D3
L1
E1S10E301Z
X1
SVQG43U1598T
Z1 1.5K
Z2 1K
Z3 4.7K
R39 100K
R36 4.7K
R38 47K
R37 150K
R34 4.7K
R22 4.7K
R33 47K
R31 2.2K
R32 2.2K
R35 10K
R40 1K
R2 10K
R1 4.7K
R4 10K
R73 47K
R8 5.6K
R9 470K
R5 100
R7 330K
R6 1.5K
R3 4.7K
R23 22K
R18 3.3K
R19 47K
R10 220K
R13 5.6K
R24 1.5K
R14 15K
R11 680K
R17 150K
R15 22K
R16 330K
R12 4.7K
R20 47K
R21 100K
R72 2.2
R25 33K
R26 470
R27 4.7K
R28 10K
R29 47K
R30 330
R66 1K
R52 330
R55 330
R54 470
R53 2.2K
R60 1K
R56 10K
R59 8.2K
R57 3.3K
R58 6.8K
R67 1K
R65 10K
R61 8.2K
R62 15K
R48 1K
R47 1K
R64 1K
R63 4.7K
R71 4.7K
R50 1K
R49 1K
R46 1K
R45 1K
R51 1K
R69 4.7K
R70 4.7K
R41 1.5K
R42 1.5K
R44 1K
R43 1K
R68 1K
C1 16V47
C2 0.047
C3 50V1
C4 50V1
C5 50V1
C6 50V1
C7 25V4.7
C8 50V1
C9 0.047
C10 220P
C11 220P
C12 220P
C13 16V33
C14 0.047
C15 220P
C16 6V47
C17 0.047
C18 0.047
C19 0.047
C20 0.047
C21 0.047
C22 50V1
C23 0.047
C24 6V47
C25 50V1
C26 0.0047
C27 6V47
C28 100P
AB3
AB2
AB1
AB0
IB5
IB4
IB3
IB2
IB1
IB0
E
PG0
PG1
OB0
OB1
OB2
OB3
OB4
OB5
OB6
OB7
STO
TCL
DB7
DB6
DB5
DB4
DB3
DB2
DB1
DB0
WR
RD
ALE
P20
P21
PSEN
P22
TEST
+15
+6
IC
MCT4
PG4
PG5
MCP
KLOF
SNS
SUPG1035
GCMK-S9EHB

NOTES:
- IC'S
  - IC1: SVIGTC4066BP
  - IC2: AN6552F
  - IC3, 13, 14: SVIGM74LS74
  - IC4: SVIGTC4049BP
  - IC5: SVIGM74LS05
  - IC6, 7, 19: SVIGM74LS08
  - IC8, 9: SVIGM74LS75
  - IC10: SVIGM5L2101A
  - IC11: SVIGM74LS138
  - IC12: SVIGM74LS30
  - IC15: SVIGM74LS293
  - IC16: SVIGM74LS04
  - IC17: AN6914
  - IC18: SVIGM74LS00
  - IC20: SVIGD8049037
  - IC21: SVIGD2316675
- TRANSISTORS
  - Q1, 2: 2SC828AQRS
  - Q3: 2SC1047C (Selected)
  - Q4: 2SC1047C
- DIODES
  - D1, 2, 3: MA150IR
- BLOCK RESISTORS
  - Z1: EXBP88152M (1.5K)
  - Z2: EXBP88102M (1K)
  - Z3: EXBP88472M (4.7K)

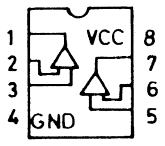
SYSTEM ASSIGNER CIRCUIT DIAGRAM (SAS)


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
Vibrato Oscillator
Master Clock Oscillator (4MHz)
IC1-1
IC2-1
IC2-2
VIB SPEED VR1 10K
VR 2 100K MOD DEPTH
L1 EIS 10E 301Z
Q 3
Q 4
CN 1
TF (CN6)
BUSY
PONR
UVD
UVON
UKD
+5
Delay Vibrato Control
(Vibrato "ON" Data)
(Delay Vibrato Data)
IC1-2
Q 1
D1
D2
Key Down Status
IC 3
Upper Key Down Data
Power ON/OFF Control
IC1-3
Glide Control
D 3
Q 2
CN 2
Address Bus
Input Bus
AB3
AB2
AB1
AB0
IB5
IB4
IB3
IB2
IB1
IB0
E
Input Buffers
IC 4
IC 5
Z 1
External RAM
IC 10
CN 3
Check Terminal
DB0
DB1
DB2
DB3
DB4
DB5
DB6
DB7
Output Buffers
CN4
Page strobe
Output Bus
PG0
PG1
OB0
OB1
OB2
OB3
OB4
OB5
OB6
OB7
IC 6
IC 7
Page Decoder
IC 11
External ROM
IC 21
Z2
IC 8
IC9
Address Latches
AH3F
IC 12
Decoder
IC16- 6

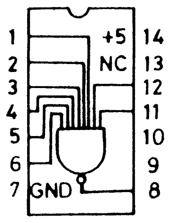

6
7
8
9
10
11
12
k Oscillator (4MHz)
CPU clock Generator
IC 13
IC 14
16MHz Oscillator
X1 SVQG 43U1598 T
16 MHz
8MHz
2MHz
MOD DEPTH
L1 EIS 10E 301Z
Q 3
Q 4
Power Down Control
IC16 -1~5
IC17
IC 15
Delay Counter
Power ON/OFF Control
IC1- 3
Glide Control
IC 18
External RAM
IC 10
8MHz/2MHz
IC 19
Strobe Buffer
CN 9
AS (CN5)
E
SNS
+5
KLOF
IC 20
Micro Computer
CN 5
STO
TCL
RHY (CN6)
Rhythm Tempo Clock
CN 6
TG (CN2)
ALE
IC
MCT4
PG4
PG5
MCP
Tab Master Clock (4MHz)
Master Clock (2MHz)
Page Decoder
IC 11
External ROM
IC 21
CN 7
WR
RD
P20
P21
PSEN
P22
TEST
CN8
Check Terminal
IC16- 6
Z 3


8
9
10
11
12
13
14
CPU clock Generator
IC 13
IC 14
16 MHz
8 MHz
2 MHz
16 MHz Oscillator
X1 SVQG 43U1598 T
R52 330
R53 2.2K
R54 470
R55 330
Power Down Control
IC16 -1~5
+6 V
R58 6.8K
R57 3.3K
R56 10K
R59 8.2K
IC 17
IC 15
Delay Counter
RW
DRW
IC 18
R61 8.2K
R60 1K
IC 19
Strobe Buffer
R64 1K
C22 50V1
R65 10K
CN 9
E
SNS
+5
AS (CN5)
C23 0.047
C24 6V47
R62 15K
R63 4.7K
C21 0.047
C27 6V47
KLOF
1 TO
2 X1
3 X2
4 RES
5 SS
6 INT
7 EA
8 RD
9 PSEN
10 WR
11 ALE
12 DB0
13 DB1
14 DB2
15 DB3
16 DB4
17 DB5
18 DB6
19 DB7
20 GND
VCC 40
T1 39
P27 38
P26 37
P25 36
P24 35
P17 34
P16 33
P15 32
P14 31
P13 30
P12 29
P11 28
P10 27
VDD 26
PROG 25
P23 24
P22 23
P21 22
P20 21
IC 20
Micro Computer
GL
XMC
R66 1K
R67 1K
CN 5
STO
TCL
RHY (CN6)
C26 0.0047
Rhythm Tempo Clock
R68 1K
CN 6
E
+15
+15
ALE
+5
+6
IC
MCT4
E
PG4
PG5
E
MCP
TG (CN2)
Tab Master Clock (4MHz)
Master Clock (2MHz)
CN 7
KLOF
+5V
+5V
R71 4.7K
P20
P21
WR
RD
ALE
P20
P21
PSEN
P22
TEST
Check Terminal
CN8
R69 4.7K
R70 4.7K
+5V
1K
z/2MHz

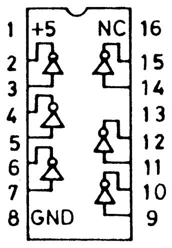
NOTES:
- IC'S
  - IC1: SVIGTC4066BP
  - IC2: AN6552F
  - IC3, 13, 14: SVIGM74LS74
  - IC4: SVIGTC4049BP
  - IC5: SVIGM74LS05
  - IC6, 7, 19: SVIGM74LS08
  - IC8, 9: SVIGM74LS75
  - IC10: SVIGM5L2101A
  - IC11: SVIGM74LS138
  - IC12: SVIGM74LS30
  - IC15: SVIGM74LS293
  - IC16: SVIGM74LS04
  - IC17: AN6914
  - IC18: SVIGM74LS00
  - IC20: SVIGD8049037
  - IC21: SVIGD2316675
- TRANSISTORS
  - Q1, 2: 2SC828AQRS
  - Q3: 2SC1047C (Selected)
  - Q4: 2SC1047C
- DIODES
  - D1, 2, 3: MA150IR
- BLOCK RESISTORS
  - Z1: EXBP88152M (1.5K)
  - Z2: EXBP88102M (1K)
  - Z3: EXBP88472M (4.7K)


VCC
GND
1
2
3
4
5
6
7
8

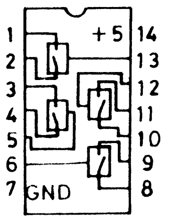
AN 6552
AN 6914


+5
NC
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14

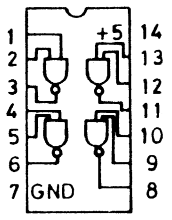
74 LS 30


+5
NC
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

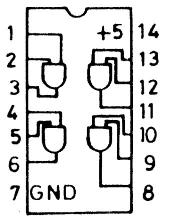
4049


+5
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14

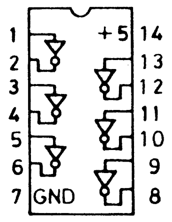
4066


+5
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14

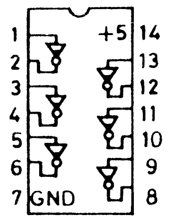
74 LS 00


+5
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14

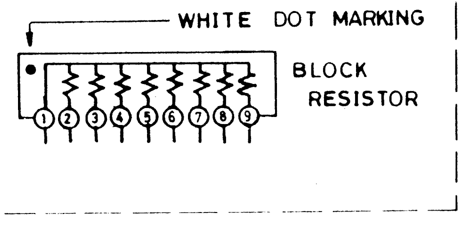
74 LS 08


+5
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14

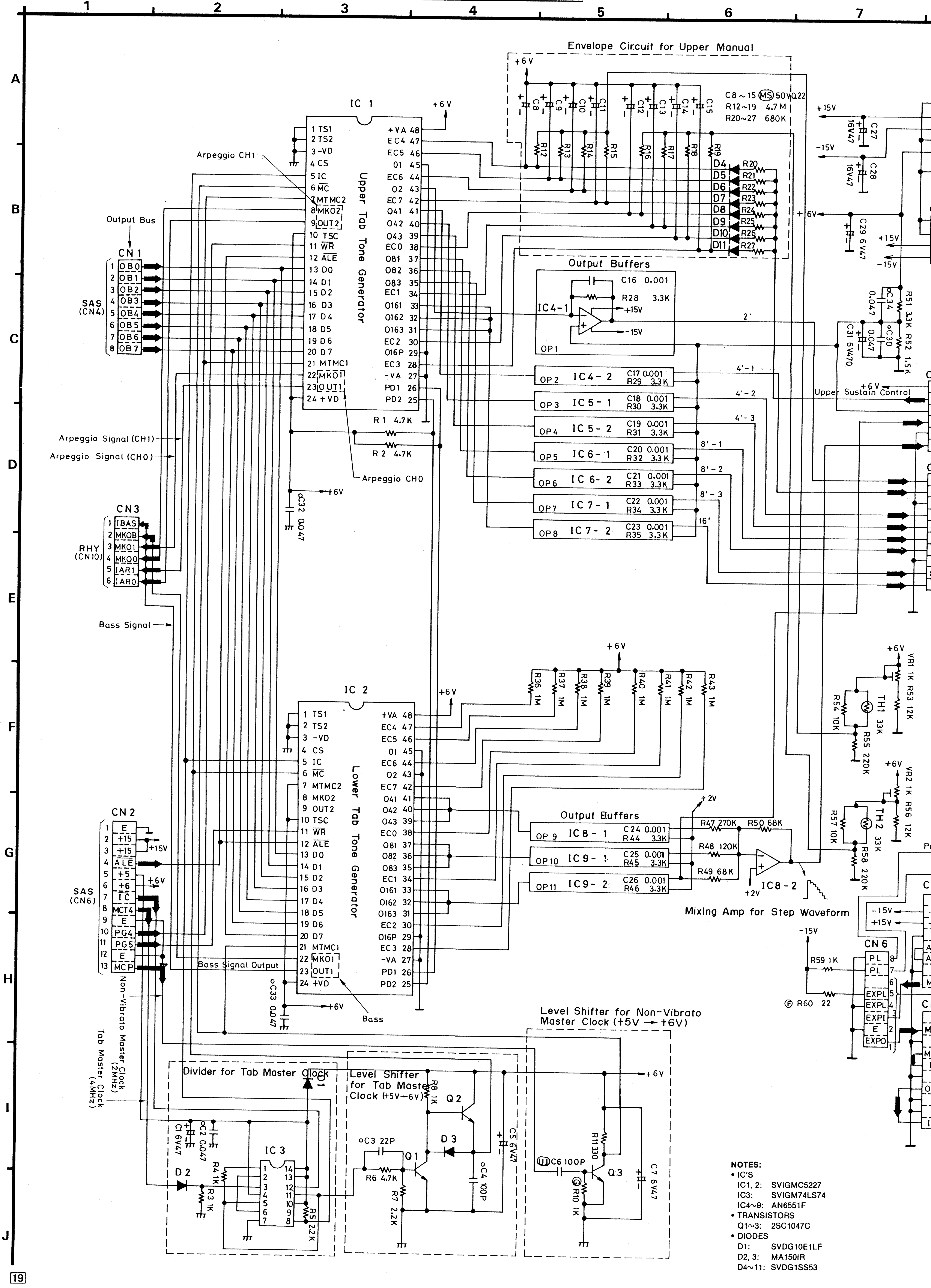
74 LS 04


+5
GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14

74 LS 05

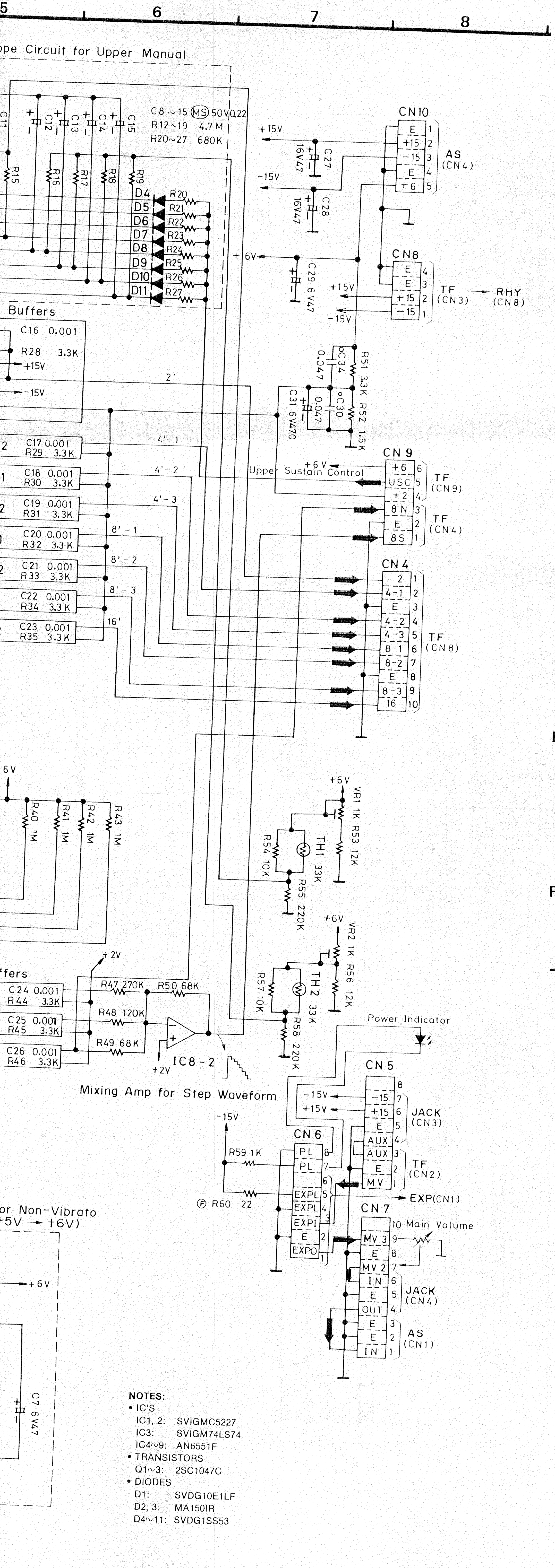

WHITE DOT MARKING
BLOCK
RESISTOR
1
2
3
4
5
6
7
8
9

TONE GENERATOR CIRCUIT DIAGRAM (TG)



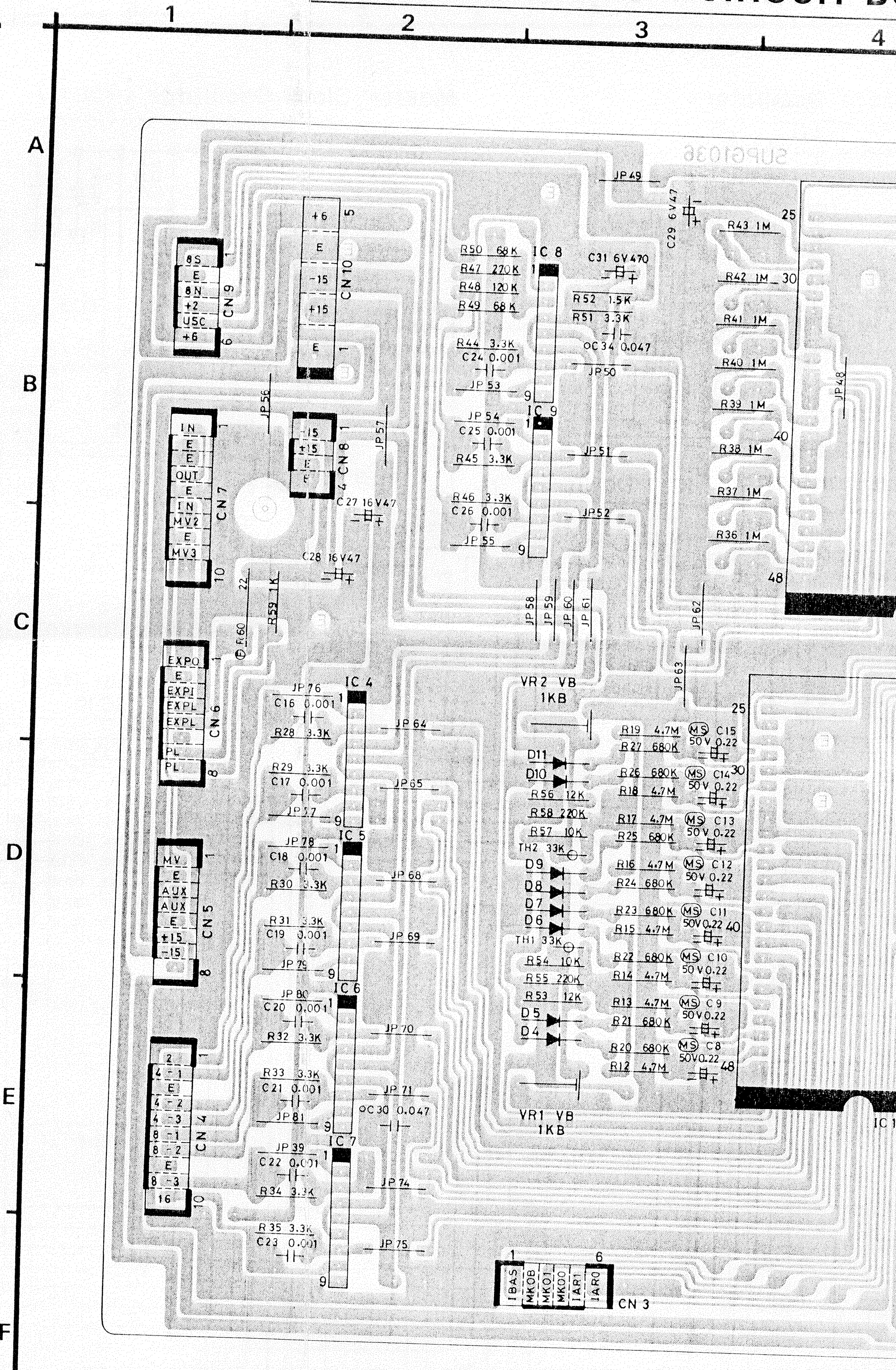
1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
Envelope Circuit for Upper Manual
C8～15 (MS) 50V 0.22
R12～19 4.7M
R20～27 680K
IC 1
Upper Tab Tone Generator
Arpeggio CH1
Arpeggio CH0
Output Bus
CN 1
SAS (CN4)
OB0
OB1
OB2
OB3
OB4
OB5
OB6
OB7
Output Buffers
C16 0.001
R28 3.3K
IC4-1
OP1
OP2 IC4-2 C17 0.001 R29 3.3K
OP3 IC5-1 C18 0.001 R30 3.3K
OP4 IC5-2 C19 0.001 R31 3.3K
OP5 IC6-1 C20 0.001 R32 3.3K
OP6 IC6-2 C21 0.001 R33 3.3K
OP7 IC7-1 C22 0.001 R34 3.3K
OP8 IC7-2 C23 0.001 R35 3.3K
2'
4'-1
4'-2
4'-3
8'-1
8'-2
8'-3
16'
Upper Sustain Control
R1 4.7K
R2 4.7K
C32 0.047
Arpeggio Signal (CH1)
Arpeggio Signal (CH0)
CN3
RHY (CN10)
IBAS
MKOB
MKO1
MKO0
IAR1
IAR0
Bass Signal
IC 2
Lower Tab Tone Generator
R36 1M
R37 1M
R38 1M
R39 1M
R40 1M
R41 1M
R42 1M
R43 1M
Output Buffers
OP9 IC8-1 C24 0.001 R44 3.3K
OP10 IC9-1 C25 0.001 R45 3.3K
OP11 IC9-2 C26 0.001 R46 3.3K
R47 270K
R50 68K
R48 120K
R49 68K
IC8-2
Mixing Amp for Step Waveform
CN 2
SAS (CN6)
E
+15
+15
ALE
+5
+6
IC
MCT4
E
PG4
PG5
E
MCP
Bass Signal Output
C33 0.047
Bass
Non-Vibrato Master Clock (2MHz)
Tab Master Clock (4MHz)
Divider for Tab Master Clock
D1
C1 6V47
C2 0.047
IC 3
D2
R4 1K
R3 1K
R5 22K
Level Shifter for Tab Master Clock (+5V→6V)
R8 1K
Q2
C3 22P
Q1
D3
R6 4.7K
R7 2.2K
C4 100P
C5 6V47
Level Shifter for Non-Vibrato Master Clock (+5V → +6V)
C6 100P
R11 330
Q3
R10 1K
C7 6V47
C27 16V47
C28 16V47
C29 6V47
C34 0.047
C30 0.047
C31 6V470
R51 3.3K
R52 1.5K
VR1 1K
R53 12K
R54 10K
TH1 33K
R55 220K
VR2 1K
R56 12K
R57 10K
TH2 33K
R58 220K
CN 6
PL
PL
EXPL
EXPL
EXPI
E
EXPO
R59 1K
R60 22
+15V
-15V
+6V
+2V

NOTES:
- IC'S
  - IC1, 2: SVIGMC5227
  - IC3: SVIGM74LS74
  - IC4～9: AN6551F
- TRANSISTORS
  - Q1～3: 2SC1047C
- DIODES
  - D1: SVDG10E1LF
  - D2, 3: MA150IR
  - D4～11: SVDG1SS53


5
6
7
8
pe Circuit for Upper Manual
C8～15 (MS) 50V 0.22
R12～19 4.7M
R20～27 680K
CN10
AS (CN4)
+15V
-15V
+6V
CN8
TF (CN3) → RHY (CN8)
Buffers
C16 0.001
R28 3.3K
Upper Sustain Control
CN 9
TF (CN9)
TF (CN4)
CN 4
TF (CN8)
VR1 1K
R53 12K
TH1 33K
R54 10K
R55 220K
VR2 1K
R56 12K
TH 2 33K
R57 10K
R58 220K
ffers
R47 270K
R50 68K
R48 120K
R49 68K
IC8-2
Mixing Amp for Step Waveform
Power Indicator
CN 5
JACK (CN3)
CN 6
TF (CN2)
EXP(CN1)
R59 1K
Ⓕ R60 22
CN 7
Main Volume
JACK (CN4)
AS (CN1)
or Non-Vibrato
+5V → +6V)
C7 6V47

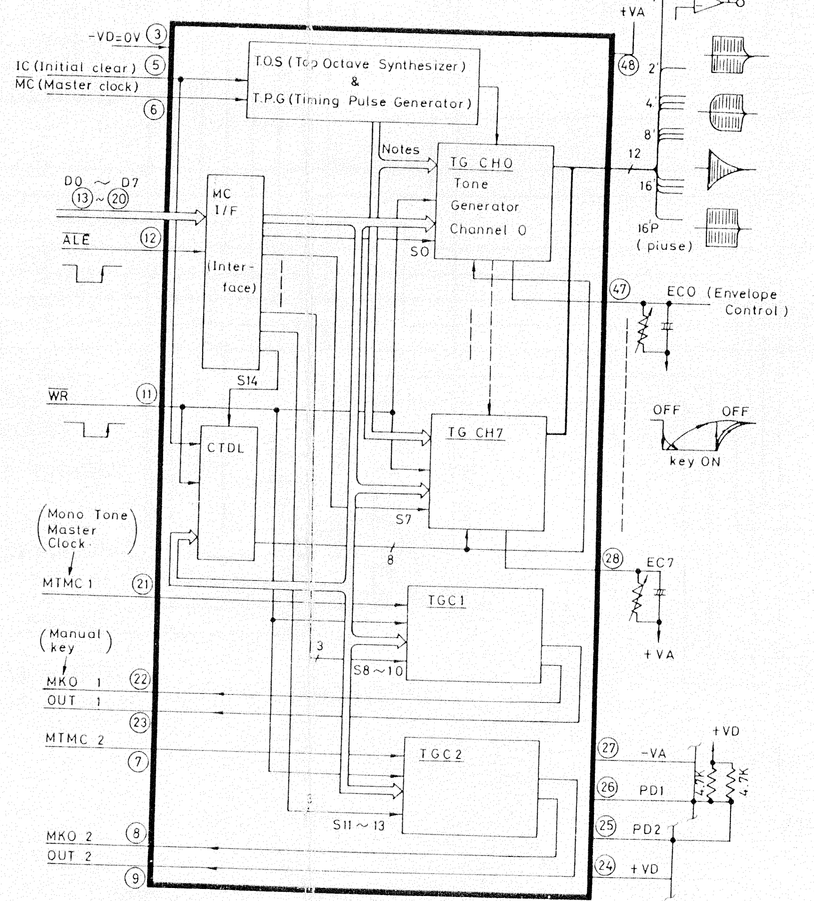
NOTES:
- IC'S
  - IC1, 2: SVIGMC5227
  - IC3: SVIGM74LS74
  - IC4～9: AN6551F
- TRANSISTORS
  - Q1～3: 2SC1047C
- DIODES
  - D1: SVDG10E1LF
  - D2, 3: MA150IR
  - D4～11: SVDG1SS53

TONE GENERATOR CIRCUIT BO


1
2
3
4
A
B
C
D
E
F
CN 9
CN 10
CN 7
CN 8
CN 6
CN 5
CN 4
CN 3
IC 4
IC 5
IC 6
IC 7
IC 8
IC 9
VR2 VB 1KB
VR1 VB 1KB
TH2 33K
TH1 33K

NOTES:
- IC'S
  - IC1, 2: SVIGMC
  - IC3: SVIGM7
  - IC4～9: AN6551F
- TRANSISTORS
  - Q1～3: 2SC1047

OUTLINE OF TONE GENERATOR LSI (SVIGM


-VD=0V ③
IC (Initial clear) ⑤
MC (Master clock) ⑥
T.O.S (Top Octave Synthesizer) & T.P.G (Timing Pulse Generator)
Notes
TG CH0 Tone Generator Channel 0
D0 ～ D7 ⑬～⑳
MC I/F (Inter-face)
ALE ⑫
S0
S14
WR ⑪
CTDL
TG CH7
S7
(Mono Tone Master Clock)
MTMC 1 ㉑
TGC1
(Manual key)
MKO 1 ㉒
OUT 1 ㉓
S8～10
MTMC 2 ⑦
TGC2
S11～13
MKO 2 ⑧
OUT 2 ⑨
+VA
㊽
2'
4'
8'
12
16
16P (piuse)
㊼ EC0 (Envelope Control)
OFF
OFF
key ON
㉘ EC7
+VA
㉗ -VA
㉖ PD1
㉕ PD2
㉔ +VD
+VD
4.7K

Specification

1. TG CH0～CH7 (O

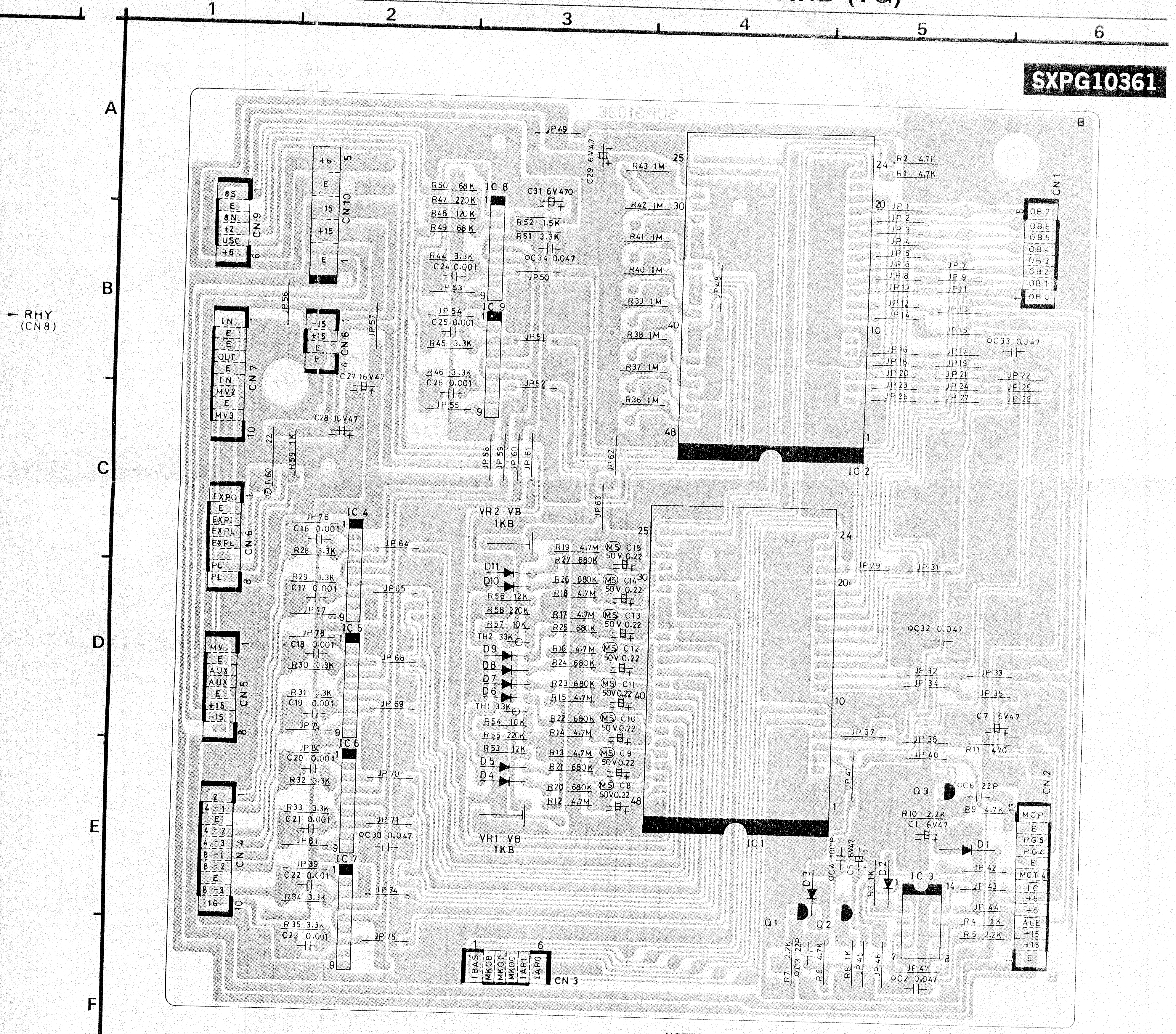
Pin No.	Pin Name	C
45 43	01 02	1' 2'
41 40 39	041 042 043	4
37 36 35	081 082 083	8'
33 32 31	0161 0162 0163	16
29	016P	16' (1/16

2. TGC1, TGC2

OUT 1 → Rectangu
OUT 2 → Rectangu

MKO 1 → Key on/o
MKO 2 → Key on/o

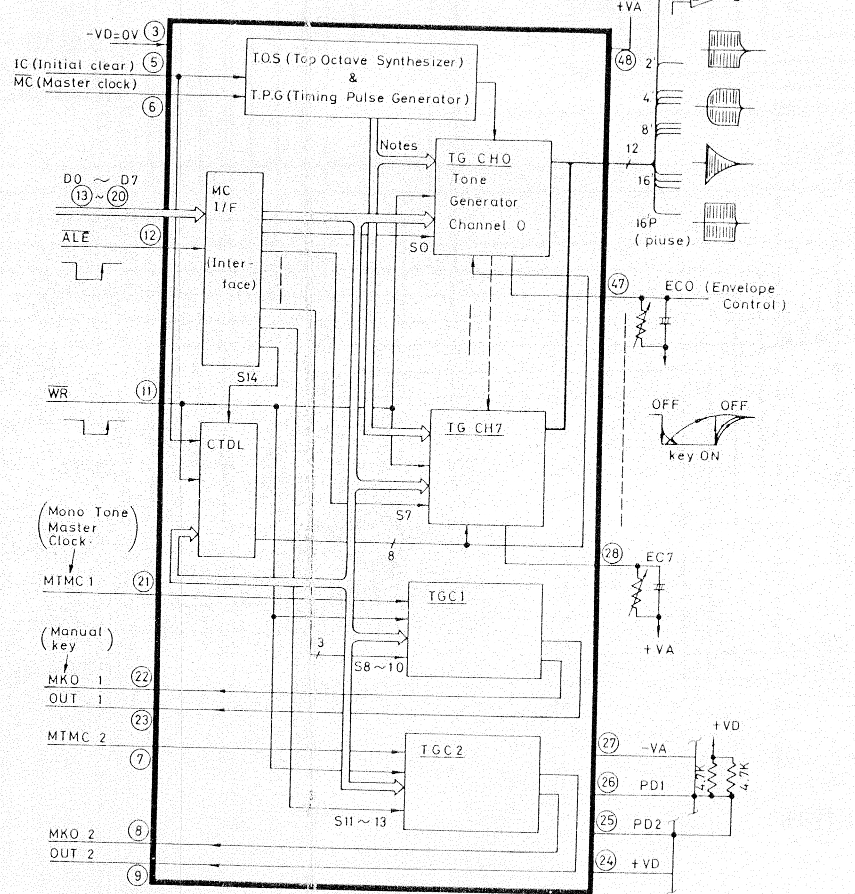
TONE GENERATOR CIRCUIT BOARD (TG)


1
2
3
4
5
6
A
B
C
D
E
F
SXPG10361
RHY (CN8)
CN 1
CN 2
CN 3
CN 4
CN 5
CN 6
CN 7
CN 8
CN 9
CN 10
IC 1
IC 2
IC 3
IC 4
IC 5
IC 6
IC 7
IC 8
IC 9
VR2 VB 1KB
VR1 VB 1KB
Q1
Q2
Q3
8S
E
8N
+2
USC
+6
-15
+15
IN
OUT
MV2
MV3
EXPO
EXPI
EXPL
PL
MV
AUX
1BAS
MKOB
MKO1
MKOO
1AR1
1ARO
OB 7
OB 6
OB 5
OB 4
OB 3
OB 2
OB 1
OB 0
MCP
PG5
PG4
MCT 4
IC
ALE
C31 6V470
C29 6V47
C27 16V47
C28 16V47
R59 1K
R43 1M
R42 1M
R41 1M
R40 1M
R39 1M
R38 1M
R37 1M
R36 1M
R2 4.7K
R1 4.7K
OC33 0.047
OC32 0.047
OC34 0.047
OC30 0.047
OC2 0.047
C7 6V47
R11 470
OC6 22P
R9 4.7K
R10 2.2K
C1 6V47
D1
D2
D3
R7 2.2K
OC3 22P
R6 4.7K
R8 1K
R3 1K
C5 6V47
OC4 100P
R4 1K
R5 2.2K
TH1 33K
TH2 33K

NOTES:

- IC'S
  - IC1, 2: SVIGMC5227
  - IC3: SVIGM74LS74
  - IC4∼9: AN6551F
- TRANSISTORS
  - Q1∼3: 2SC1047C
- DIODES
  - D1: SVDG10E1LF
  - D2, 3: MA150IR
  - D4∼11: SVDG1SS53

OUTLINE OF TONE GENERATOR LSI (SVIGMC5227)


-VD=0V ③
IC (Initial clear) ⑤
MC (Master clock) ⑥
D0 ∼ D7 ⑬∼⑳
ALE ⑫
WR ⑪
(Mono Tone Master Clock)
MTMC 1 ㉑
(Manual key)
MKO 1 ㉒
OUT 1 ㉓
MTMC 2 ⑦
MKO 2 ⑧
OUT 2 ⑨
T.O.S (Top Octave Synthesizer) & T.P.G (Timing Pulse Generator)
Notes
TG CHO Tone Generator Channel 0
MC I/F (Inter-face)
S0
S14
CTDL
TG CH7
S7
8
TGC1
3
S8∼10
TGC2
S11∼13
+VA
㊽
1'
2'
4'
8'
12
16'
16'P (piuse)
㊼ ECO (Envelope Control)
OFF
OFF
key ON
㉘ EC7
+VA
+VD
㉗ -VA
㉖ PD1
㉕ PD2
㉔ +VD
4.7K
4.7K

Specification of Tone Generator

1. TG CH0∼CH7 (Output: Max 8 channels)

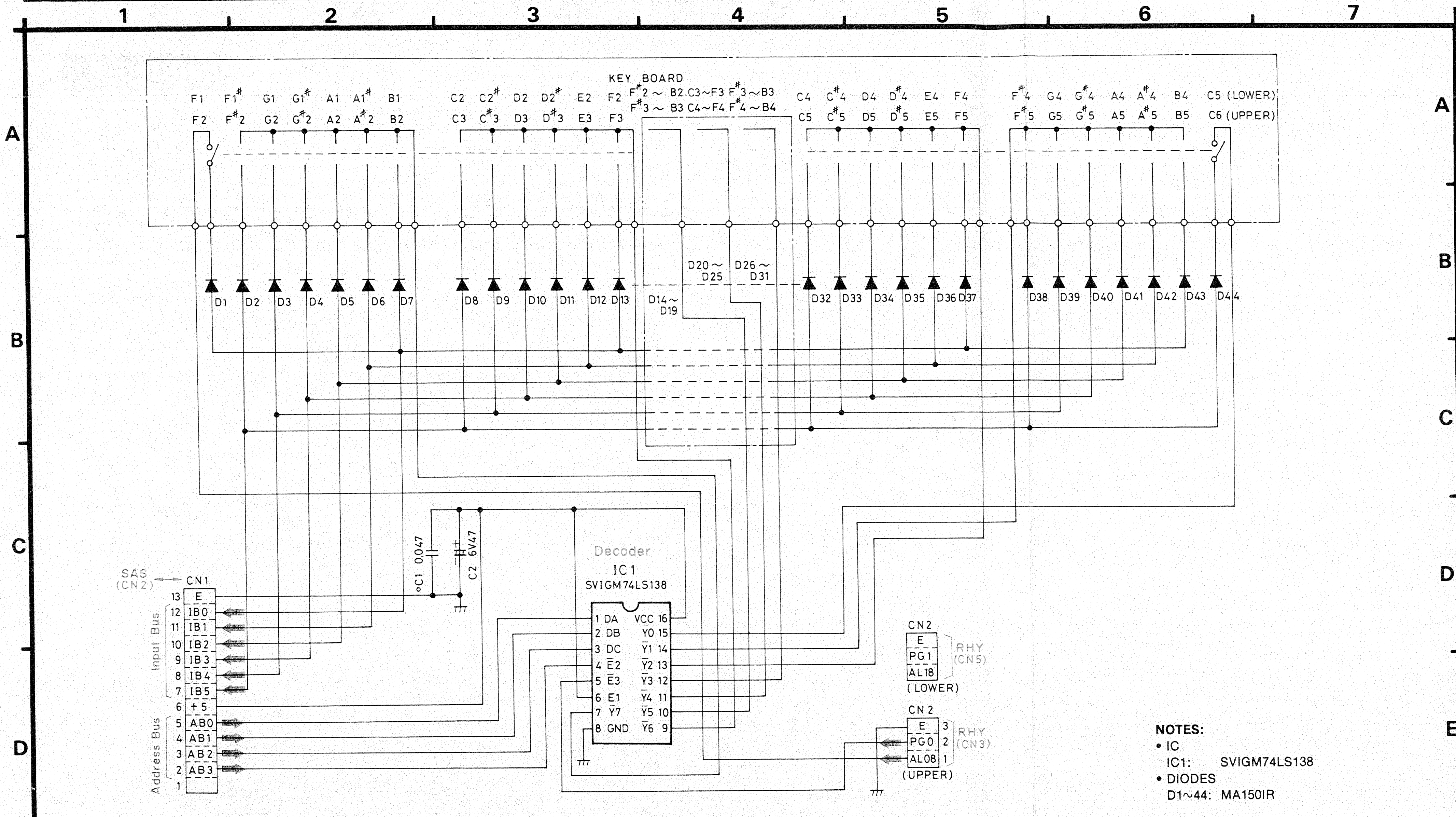
Pin No.	Pin Name	Output	Keyboard Range	Remarks
45 43	01 02	1' 2'	} All range	• Output level ≃ 0.9Vpp/one key "on" duty 1/2 (at operational amp (AN6551) output)
41 40 39	041 042 043	} 4'	C∼B, c∼b, c^1∼b^1 c^2∼b^2 c^3∼c^4	
37 36 35	081 082 083	} 8'	C∼B, c∼b, c^1∼b^1 c^2∼b^2 c^3∼c^4	
33 32 31	0161 0162 0163	} 16'	C∼B, c∼b, c^1∼b^1 c^2∼b^2 c^3∼c^4	
29	016P	16' (1/16 duty)	All range	≃ 0.4Vpp/one key "on" duty 1/16

2. TGC1, TGC2

OUT 1 → Rectangular wave output }
OUT 2 → Rectangular wave output } 6Vpp duty 1/2

MKO 1 → Key on/off output }
MKO 2 → Key on/off output } ON 0 + VD (6V)

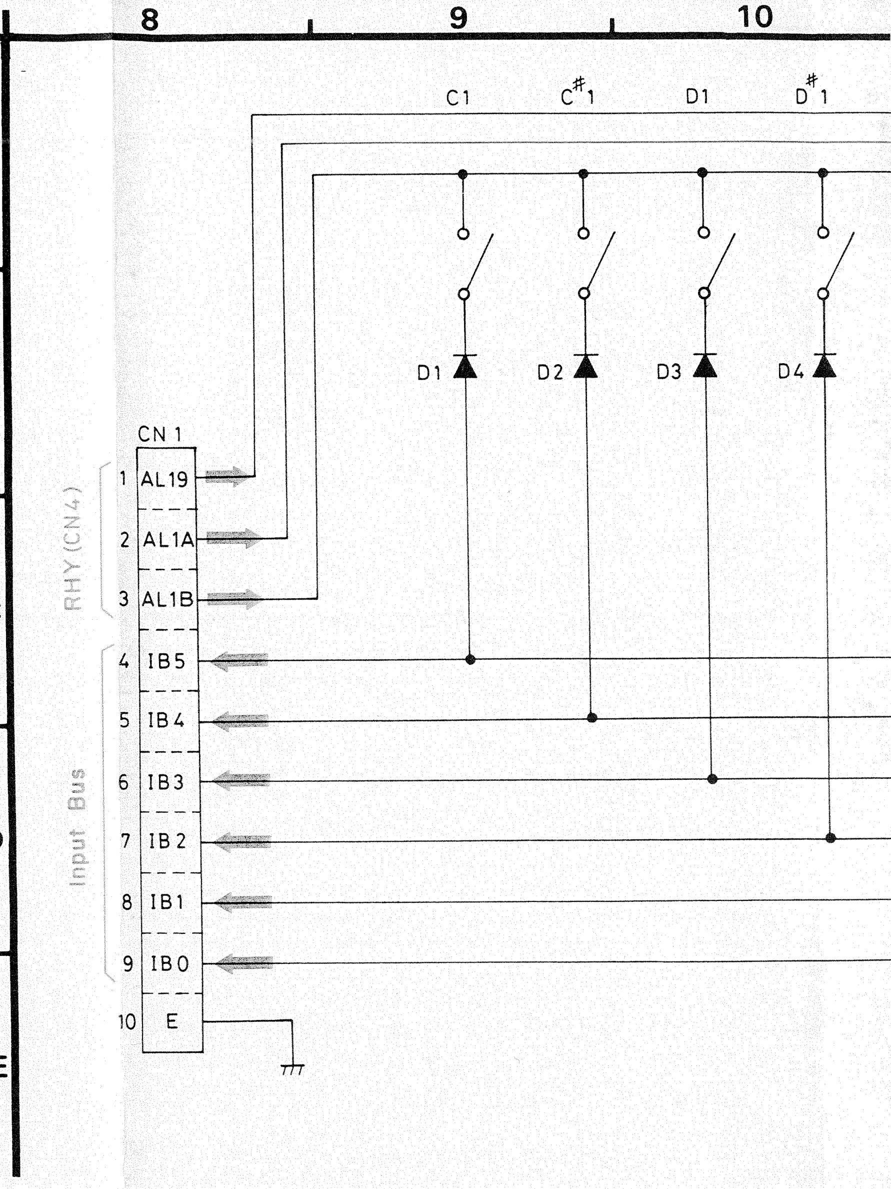
MANUAL KEYBOARD CIRCUIT DIAGRAM (MKB)


1
2
3
4
5
6
7
A
B
C
D
E
KEY BOARD
F1 F1# G1 G1# A1 A1# B1
F2 F#2 G2 G#2 A2 A#2 B2
C2 C2# D2 D2# E2 F2 F#2 ~ B2 C3~F3 F#3~B3
C3 C#3 D3 D#3 E3 F3 F#3 ~ B3 C4~F4 F#4~B4
C4 C#4 D4 D#4 E4 F4
C5 C#5 D5 D#5 E5 F5
F#4 G4 G#4 A4 A#4 B4 C5 (LOWER)
F#5 G5 G#5 A5 A#5 B5 C6 (UPPER)
D1 D2 D3 D4 D5 D6 D7
D8 D9 D10 D11 D12 D13
D14~D19
D20~D25
D26~D31
D32 D33 D34 D35 D36 D37
D38 D39 D40 D41 D42 D43 D44
C1 0.047
C2 6V47
Decoder
IC1
SVIGM74LS138
1 DA
2 DB
3 DC
4 E2
5 E3
6 E1
7 Y7
8 GND
VCC 16
Y0 15
Y1 14
Y2 13
Y3 12
Y4 11
Y5 10
Y6 9
SAS (CN2)
CN1
Input Bus
Address Bus
13 E
12 IB0
11 IB1
10 IB2
9 IB3
8 IB4
7 IB5
6 +5
5 AB0
4 AB1
3 AB2
2 AB3
1
CN2
E
PG1
AL18
(LOWER)
RHY (CN5)
CN2
E 3
PG0 2
AL08 1
(UPPER)
RHY (CN3)

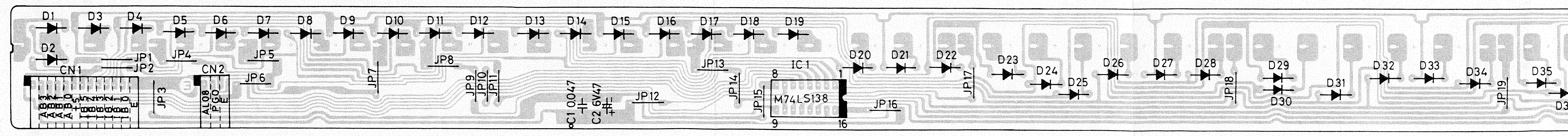
NOTES:

- IC
  IC1: SVIGM74LS138
- DIODES
  D1~44: MA150IR

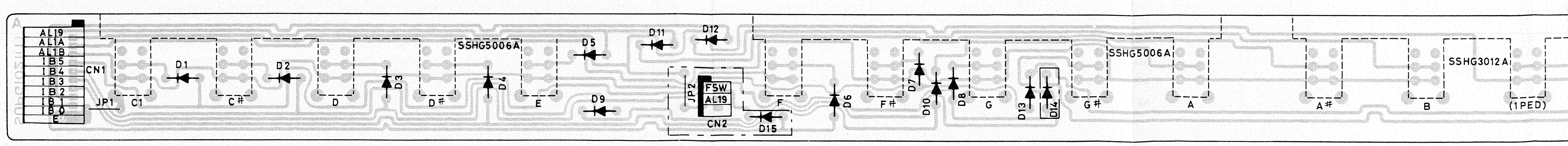
PEDAL KEYBOARD CIRCUIT DIAGRA


8
9
10
A
B
C
D
E
C1
C#1
D1
D#1
D1
D2
D3
D4
CN1
RHY (CN4)
Input Bus
1 AL19
2 AL1A
3 AL1B
4 IB5
5 IB4
6 IB3
7 IB2
8 IB1
9 IB0
10 E

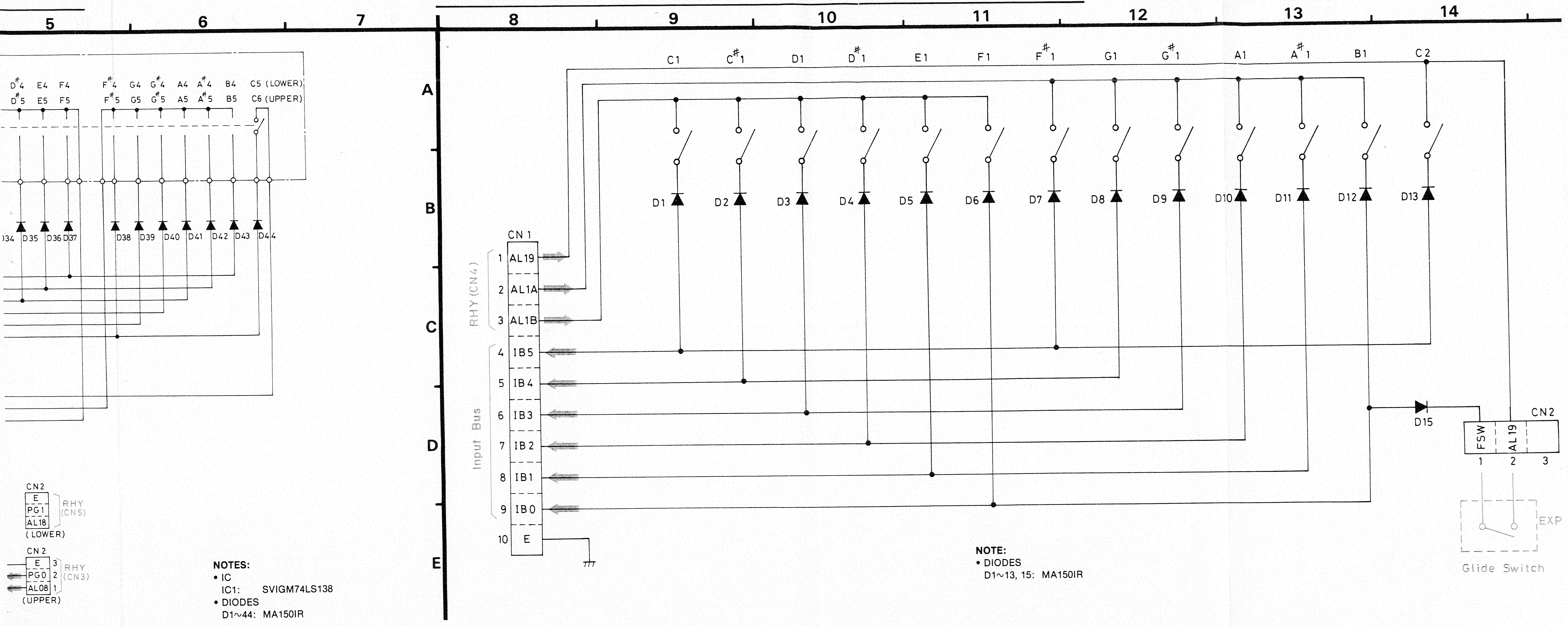
MANUAL KEYBOARD CIRCUIT BOARD (MKB)


D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15 D16 D17 D18 D19
D20 D21 D22 D23 D24 D25 D26 D27 D28 D29 D30 D31 D32 D33 D34 D35
JP1 JP2 JP3 JP4 JP5 JP6 JP7 JP8 JP9 JP10 JP11 JP12 JP13 JP14 JP15 JP16 JP17 JP18 JP19
CN1
AB3 AB2 AB1 AB0 +5 IB5 IB4 IB3 IB2 IB1 IB0 E
CN2
AL08 PG0 E
C1 0.047
C2 6V47
IC1
M74LS138
8
1
9
16

PEDAL KEYBOARD CIRCUIT BOARD (PKB)


AL19
AL1A
AL1B
IB5
IB4
IB3
IB2
IB1
IB0
E
CN1
JP1
C1
C#
D
D#
E
F
F#
G
G#
A
A#
B
(1PED)
D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14 D15
SSHG5006A
SSHG5006A
SSHG3012A
JP2
FSW
AL19
CN2

PEDAL KEYBOARD CIRCUIT DIAGRAM (PKB)

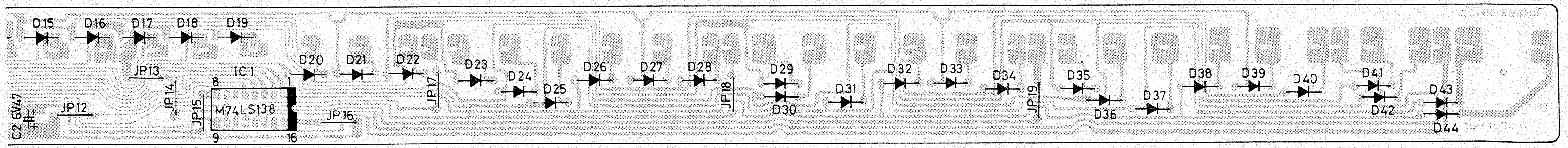

5
6
7
8
9
10
11
12
13
14
A
B
C
D
E
D#4 E4 F4 F#4 G4 G#4 A4 A#4 B4 C5 (LOWER)
D#5 E5 F5 F#5 G5 G#5 A5 A#5 B5 C6 (UPPER)
D34 D35 D36 D37 D38 D39 D40 D41 D42 D43 D44
CN2
E
PG1
AL18
RHY (CN5)
(LOWER)
CN2
E 3
PG0 2
AL08 1
RHY (CN3)
(UPPER)
C1
C#1
D1
D#1
E1
F1
F#1
G1
G#1
A1
A#1
B1
C2
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
CN 1
1 AL19
2 AL1A
3 AL1B
4 IB5
5 IB4
6 IB3
7 IB2
8 IB1
9 IB0
10 E
RHY (CN4)
Input Bus
D15
CN2
FSW
AL19
1
2
3
EXP
Glide Switch

NOTES:
- IC
  IC1: SVIGM74LS138
- DIODES
  D1~44: MA150IR

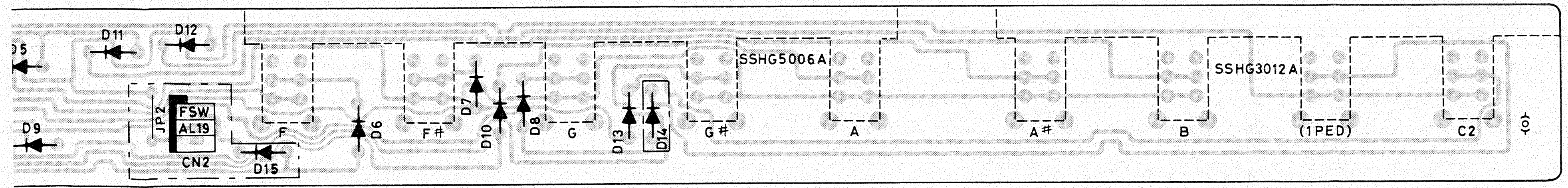
NOTE:
- DIODES
  D1~13, 15: MA150IR

(B)

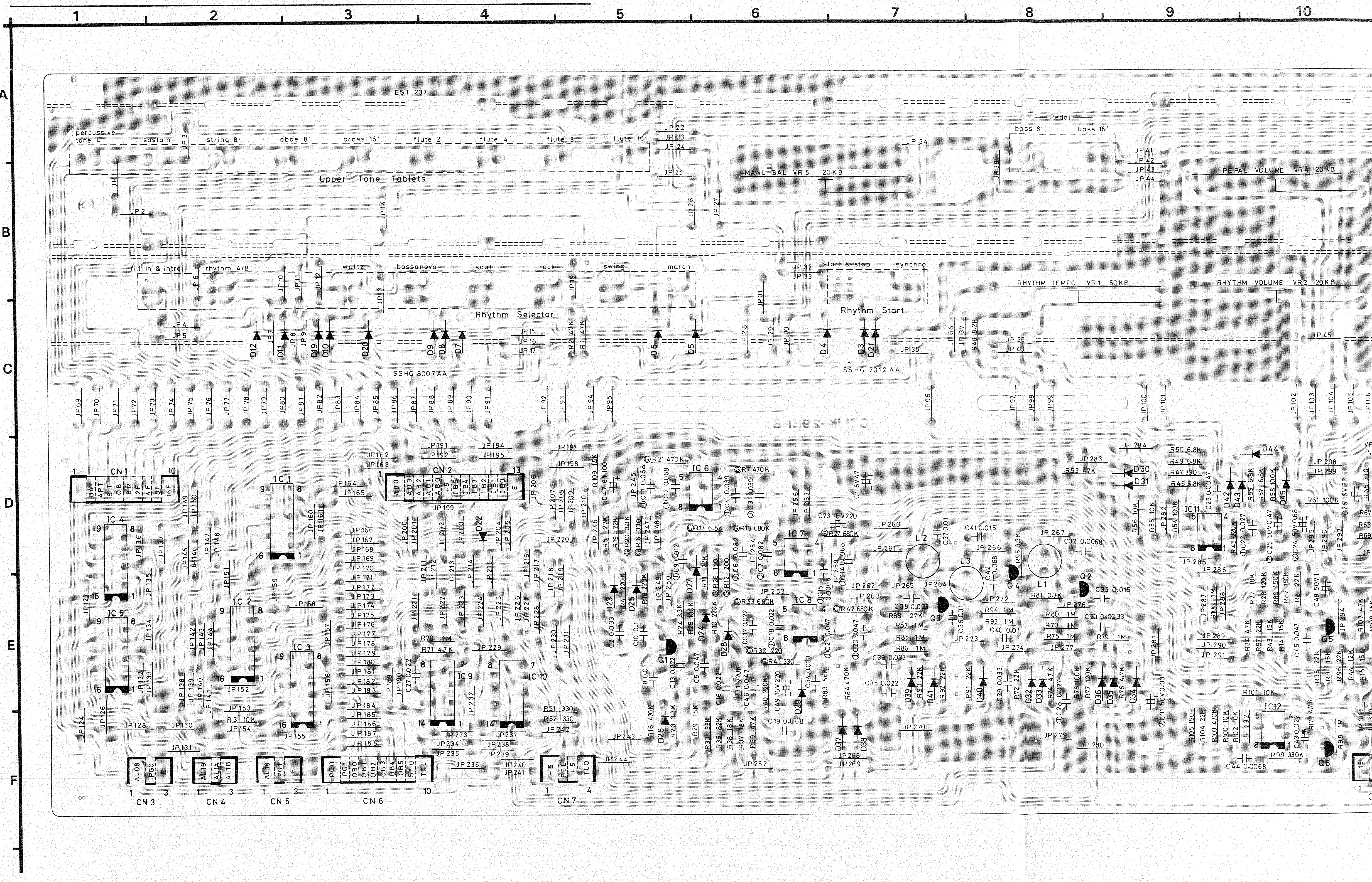
SXPG10201

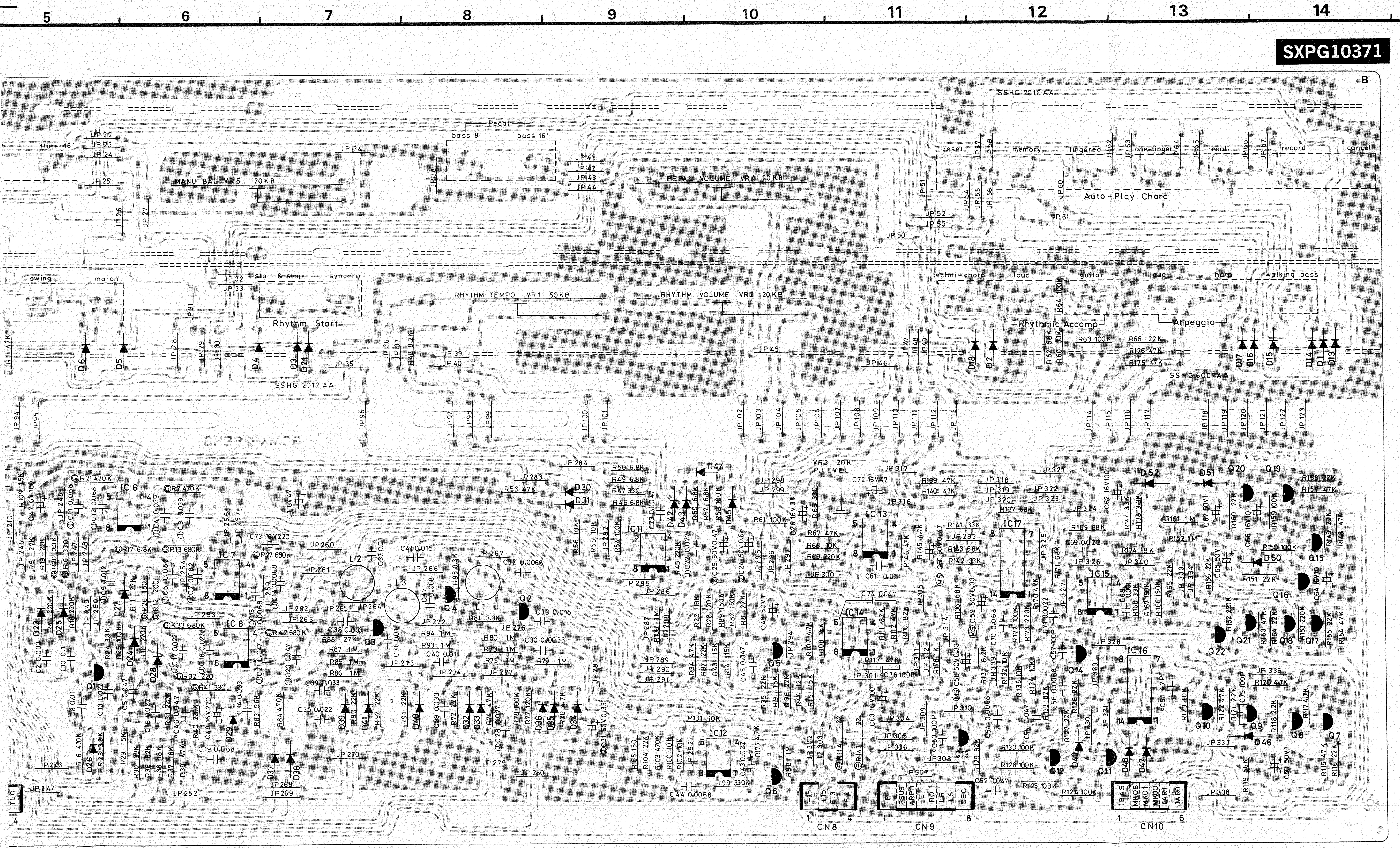

D15
D16
D17
D18
D19
D20
D21
D22
D23
D24
D25
D26
D27
D28
D29
D30
D31
D32
D33
D34
D35
D36
D37
D38
D39
D40
D41
D42
D43
D44
JP12
JP13
JP14
JP15
JP16
JP17
JP18
JP19
IC1
M74LS138
8
1
9
16
C2 6V47
GCMK-SBEHB
B

SXPG10211


D5
D9
D11
D12
JP2
FSW
AL19
CN2
D15
F
D6
F#
D7
D10
D8
G
D13
D14
G#
SSHG5006A
A
A#
B
SSHG3012A
(1PED)
C2

RHYTHM & PEDAL CIRCUIT BOARD (RHY)

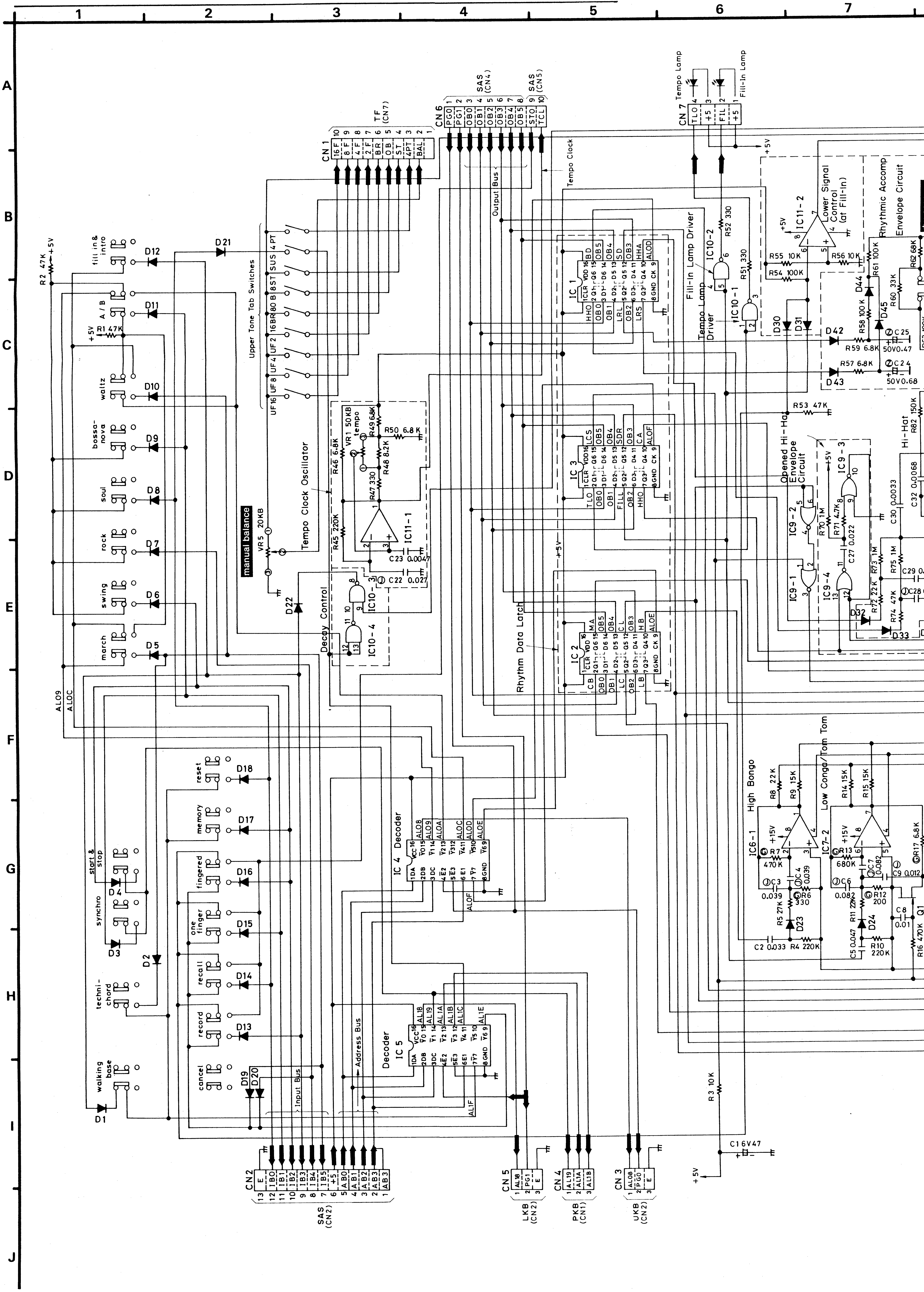

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
EST 237
percussive tone 4'
sastain
string 8'
oboe 8'
brass 16'
flute 2'
flute 4'
flute 8'
flute 16'
Upper Tone Tablets
Pedal
bass 8'
bass 16'
MANU BAL VR5 20KB
PEPAL VOLUME VR4 20KB
fill in & intro
rhythm A/B
waltz
bossanova
soul
rock
swing
march
Rhythm Selector
start & stop
synchro
Rhythm Start
RHYTHM TEMPO VR1 50KB
RHYTHM VOLUME VR2 20KB
SSHG 8007AA
SSHG 2012 AA
GCMK-29EHB
CN 1
CN 2
CN 3
CN 4
CN 5
CN 6
CN 7
IC 1
IC 2
IC 3
IC 4
IC 5
IC 6
IC 7
IC 8
IC 9
IC 10
IC11
IC12
Q1
Q2
Q3
Q4
Q5
Q6
L1
L2
L3

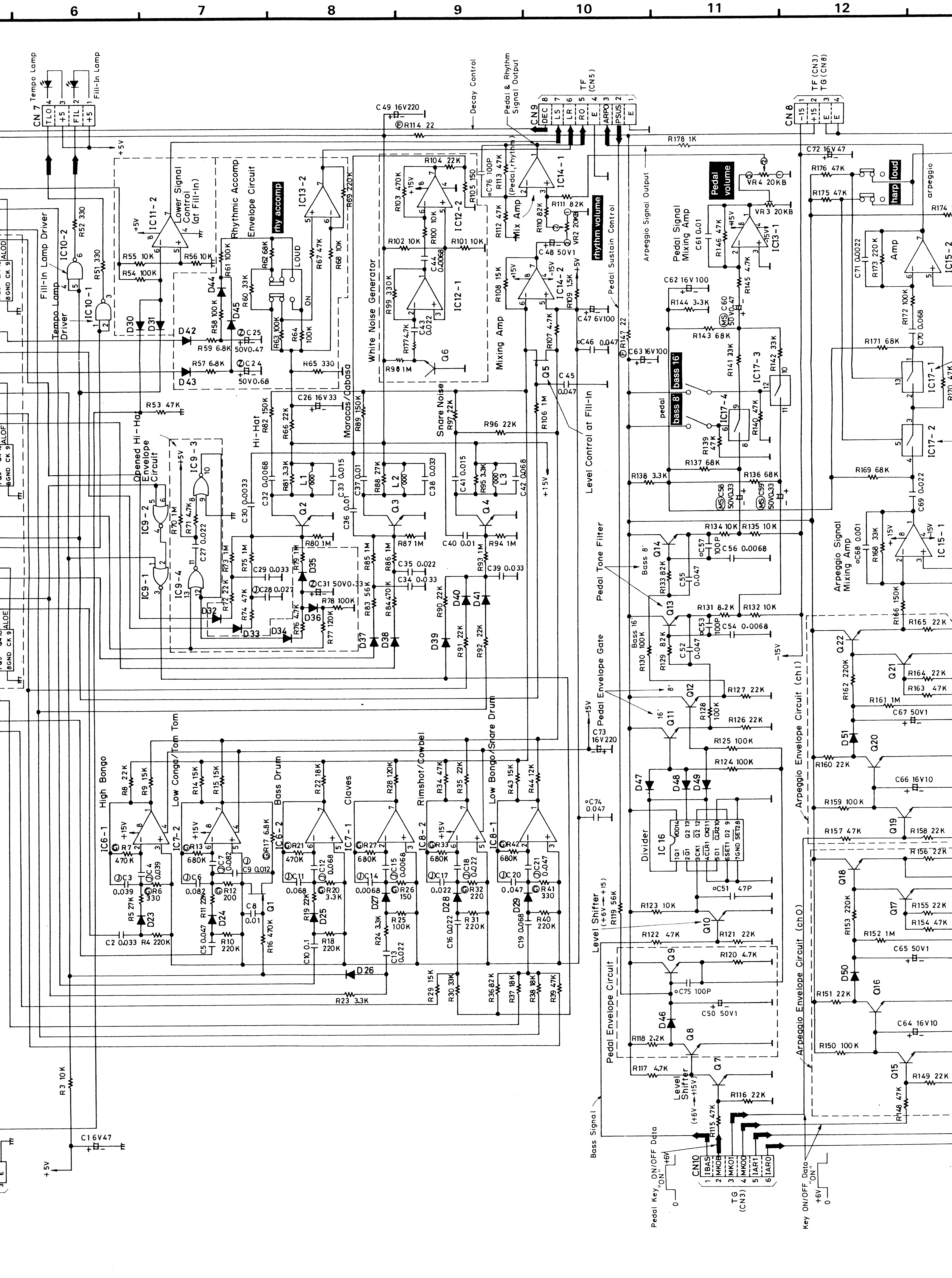

5
6
7
8
9
10
11
12
13
14
SXPG10371
B
SSHG 7010AA
Pedal
bass 8'
bass 16'
flute 16'
reset
memory
fingered
one-finger
recall
record
cancel
Auto-Play Chord
MANU BAL VR5 20KB
PEPAL VOLUME VR4 20KB
swing
march
start & stop
synchro
Rhythm Start
RHYTHM TEMPO VR1 50KB
RHYTHM VOLUME VR2 20KB
techni-chord
loud
guitar
loud
harp
walking bass
Rhythmic Accomp
Arpeggio
SSHG 2012 AA
SSHG 6007AA
GCMK-29EHB
SUPG1037
VR3 20K P.LEVEL
IC 6
IC 7
IC 8
IC11
IC12
IC13
IC14
IC15
IC16
IC17
L1
L2
L3
CN8
CN9
CN10
-15
+15
E 3
E 4
E
PSUS
ARPO
E
RO
LR
LS
DEC
IBAS
MKOB
MKO1
MKOO
IAR1
IARO
TLO

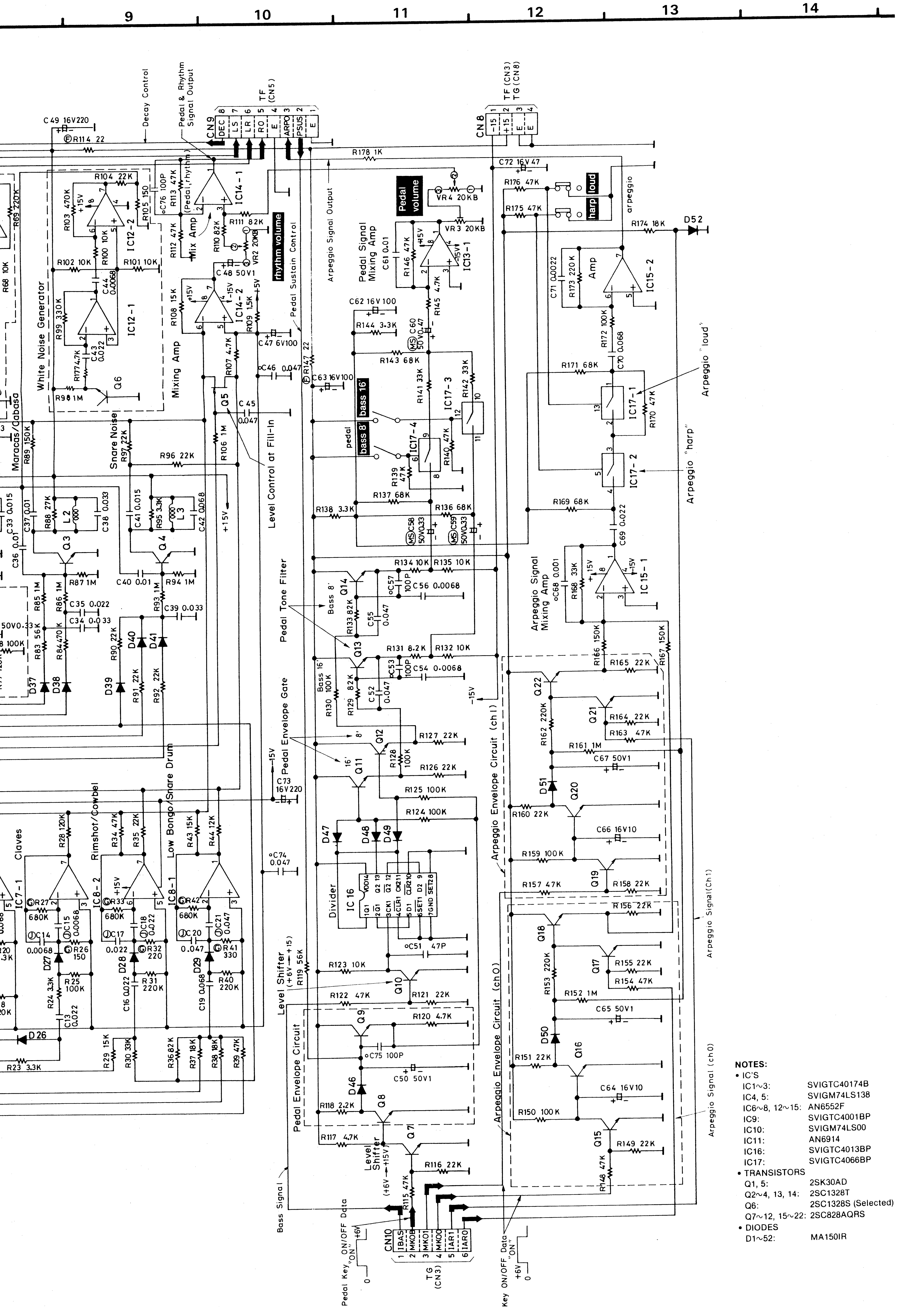
NOTES:

• IC'S		IC11:	AN6914	Q2~4, 13, 14:	2SC1328T
IC1~3:	SVIGTC40174B	IC16:	SVIGTC4013BP	Q6:	2SC1328S (Selected)
IC4, 5:	SVIGM74LS138	IC17:	SVIGTC4066BP	Q7~12, 15~22:	2SC828AQRS
IC6~8, 12~15:	AN6552F	• TRANSISTORS		• DIODES	
IC9:	SVIGTC4001BP	Q1, 5:	2SK30AD	D1~52:	MA150IR
IC10:	SVIGM74LS00				

RHYTHM & PEDAL CIRCUIT DIAGRAM (RHY)


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
fill in & intro
A / B
waltz
bossa-nova
soul
rock
swing
march
start & stop
synchro
techni-chord
walking base
reset
memory
fingered
one finger
recall
record
cancel
R2 47K
+5V
R1 47K
D1
D2
D3
D4
D5
D6
D7
D8
D9
D10
D11
D12
D13
D14
D15
D16
D17
D18
D19
D20
D21
D22
ALO9
ALOC
Upper Tone Tab Switches
4PT
SUS
8ST
16BR
UF2
UF4
UF8
UF16
CN 1
TF (CN7)
16F
8F
4F
2F
BR
OB
ST
4PT
BAL
manual balance
VR5 20KB
Tempo Clock Oscillator
VR1 50KB tempo
R46 6.8K
R49 6.8K
R50 6.8K
R48 8.2K
R47 330
R45 220K
IC11-1
C23 0.0047
C22 0.027
Decay Control
IC10-3
IC10-4
CN 6
SAS (CN4)
SAS (CN5)
PG0
PG1
OB0
OB1
OB2
OB3
OB4
OB5
STO
TCL
Output Bus
Tempo Clock
Rhythm Data Latch
IC 1
IC 2
IC 3
+5V
CN 7
Tempo Lamp
Fill-In Lamp
TLO
+5
FIL
Fill-In Lamp Driver
Tempo Lamp Driver
IC10-2
IC10-1
R52 330
R51 330
IC11-2
Lower Signal Control (at Fill-In)
R55 10K
R54 100K
R56 10K
Rhythmic Accomp Envelope Circuit
R61 100K
R62 68K
R60 33K
R58 100K
R59 6.8K
R57 6.8K
C25 50V0.47
C24 50V0.68
D30
D31
D42
D43
D44
D45
R53 47K
Opened Hi-Hat Envelope Circuit
IC9-1
IC9-2
IC9-3
IC9-4
R70 1M
R71 4.7K
C27 0.022
R72 22K
R73 1M
R74 47K
R75 1M
D32
D33
Hi-Hat
R82 150K
R83 100K
C30 0.0033
C32 0.0068
C29
C28
High Bongo
Low Conga/Tom Tom
R8 22K
R9 15K
R14 15K
R15 15K
IC6-1
IC7-2
+15V
R7 470K
C3 0.039
C4 0.039
R5 27K
R6 330
D23
C2 0.033
R4 220K
R13 680K
C7 0.082
C6 0.082
R12 200
R11 22K
D24
C5 0.047
R10 220K
C8 0.01
C9 0.012
R16 470K
R17 6.8K
Q1
IC 4 Decoder
IC 5 Decoder
ALOF
AL1F
Input Bus
Address Bus
R3 10K
C1 6V47
CN 2
SAS (CN2)
E
IB0
IB1
IB2
IB3
IB4
IB5
+5
AB0
AB1
AB2
AB3
CN 5
AL18
PG1
LKB (CN2)
CN 4
AL19
AL1A
AL1B
PKB (CN1)
CN 3
AL08
PG0
UKB (CN2)


6
7
8
9
10
11
12
CN 7
Tempo Lamp
Fill-In Lamp
TLO
+5
FIL
+5
+5V
Fill-In Lamp Driver
IC10-2
IC10-1
Tempo Lamp Driver
Lower Signal Control (at Fill-In)
IC11-2
Rhythmic Accomp Envelope Circuit
rhy accomp
IC13-2
LOUD
ON
White Noise Generator
IC12-1
IC12-2
Mixing Amp
Decay Control
Pedal & Rhythm Signal Output
CN9
TF (CN5)
DEC
LS
LR
RO
E
ARPO
PSUS
Mix Amp (Pedal, rhythm)
IC14-1
IC14-2
rhythm volume
VR2 20KB
Arpeggio Signal Output
Pedal Sustain Control
Level Control at Fill-In
Pedal Signal Mixing Amp
Pedal volume
VR4 20KB
VR3 20KB
IC13-1
bass 16'
bass 8'
pedal
IC17-3
IC17-4
CN8
TF (CN3)
TG (CN8)
-15
+15
harp
loud
arpeggio
Amp
IC15-2
IC17-1
IC17-2
Arpeggio Signal Mixing Amp
IC15-1
Opened Hi-Hat Envelope Circuit
IC9-1
IC9-2
IC9-3
IC9-4
Hi-Hat
Maracas/Cabasa
Snare Noise
Q2
Q3
Q4
Q5
Q6
Pedal Tone Filter
Bass 8'
Bass 16'
Q13
Q14
Pedal Envelope Gate
Q11
Q12
Arpeggio Envelope Circuit (ch1)
Arpeggio Envelope Circuit (ch0)
High Bongo
Low Conga/Tom Tom
Bass Drum
Claves
Rimshot/Cowbel
Low Bongo/Snare Drum
IC6-1
IC7-2
IC6-2
IC7-1
IC8-2
IC8-1
Q1
Divider
IC16
Level Shifter (+6V → +15)
Q10
Pedal Envelope Circuit
Q9
Q8
Q7
Level Shifter (+6V → +15V)
Bass Signal
Pedal Key ON/OFF Data "ON"
CN10
IBAS
MKOB
MKO1
MKO0
IAR1
IARO
TG (CN3)
Key ON/OFF Data "ON"
Q15
Q16
Q17
Q18
Q19
Q20
Q21
Q22
C1 6V47
R3 10K
+5V
-15V
+15V


9
10
11
12
13
14
Decay Control
Pedal & Rhythm Signal Output
TF (CN5)
CN9
DEC
LS
LR
RO
E
ARPO
PSUS
TF (CN3)
TG (CN8)
CN8
-15
+15
E
White Noise Generator
IC12-1
IC12-2
Mixing Amp
Mix Amp (Pedal, rhythm)
IC14-1
IC14-2
rhythm volume
Pedal Sustain Control
Level Control at Fill-In
Arpeggio Signal Output
Pedal Signal Mixing Amp
Pedal volume
IC13-1
harp
loud
arpeggio
IC15-2
Amp
IC15-1
Arpeggio Signal Mixing Amp
IC17-1
IC17-2
IC17-3
IC17-4
Arpeggio "loud"
Arpeggio "harp"
pedal
bass 8'
bass 16'
Pedal Tone Filter
Bass 8'
Bass 16'
Pedal Envelope Gate
Divider
IC16
Level Shifter (+6V→+15V)
Pedal Envelope Circuit
Bass Signal
Pedal Key ON/OFF Data "ON"
CN10
IBAS
MKOB
MKO1
MKOO
IAR1
IARO
TG (CN3)
Key ON/OFF Data "ON"
Arpeggio Envelope Circuit (ch1)
Arpeggio Envelope Circuit (ch0)
Arpeggio Signal (Ch1)
Arpeggio Signal (ch0)
Snare Noise
Maracas/Cabasa
Claves
Rimshot/Cowbel
Low Bongo/Snare Drum
IC7-1
IC8-1
IC8-2
D52

NOTES:

- IC'S

IC1~3:	SVIGTC40174B
IC4, 5:	SVIGM74LS138
IC6~8, 12~15:	AN6552F
IC9:	SVIGTC4001BP
IC10:	SVIGM74LS00
IC11:	AN6914
IC16:	SVIGTC4013BP
IC17:	SVIGTC4066BP

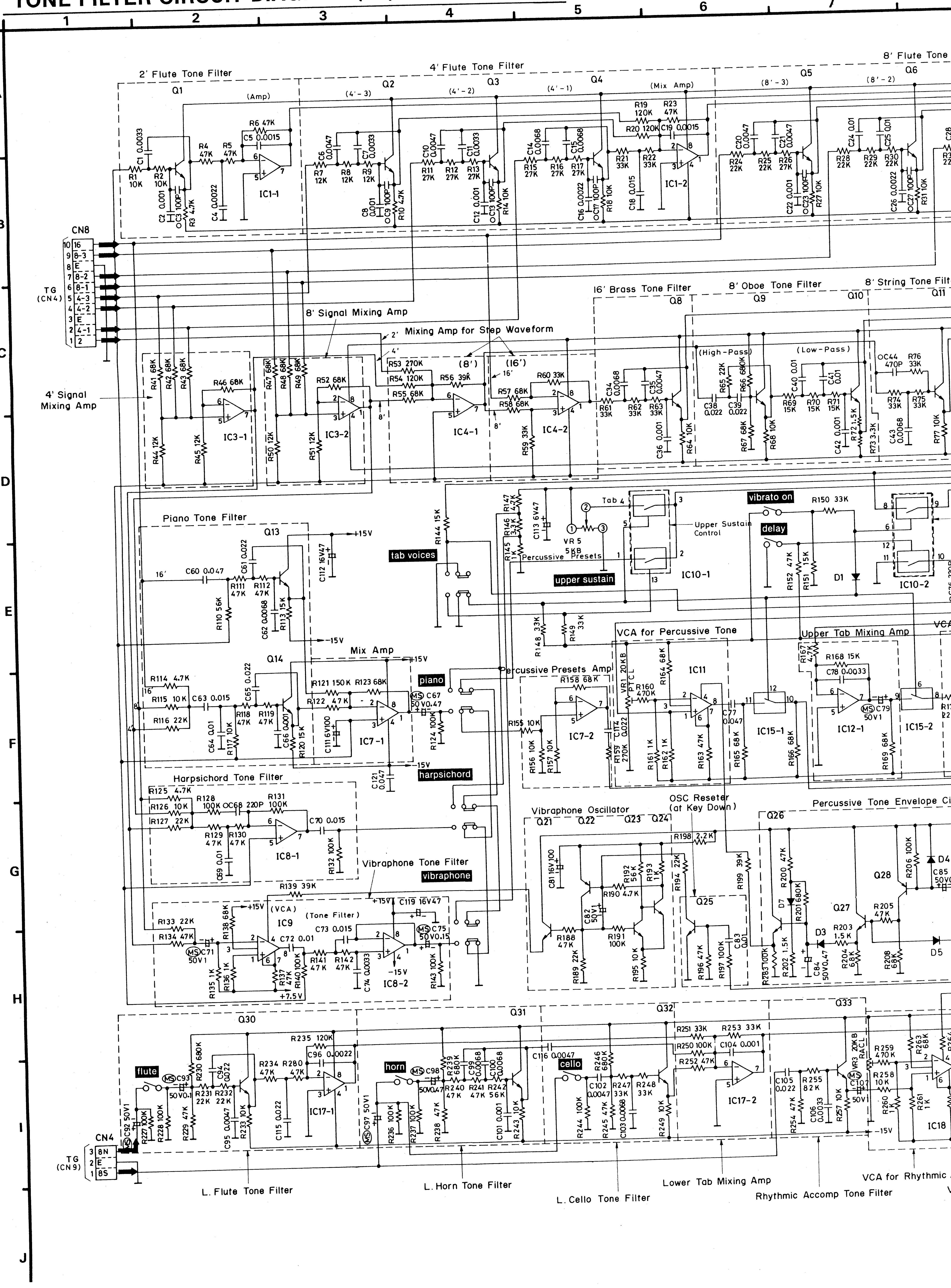
- TRANSISTORS

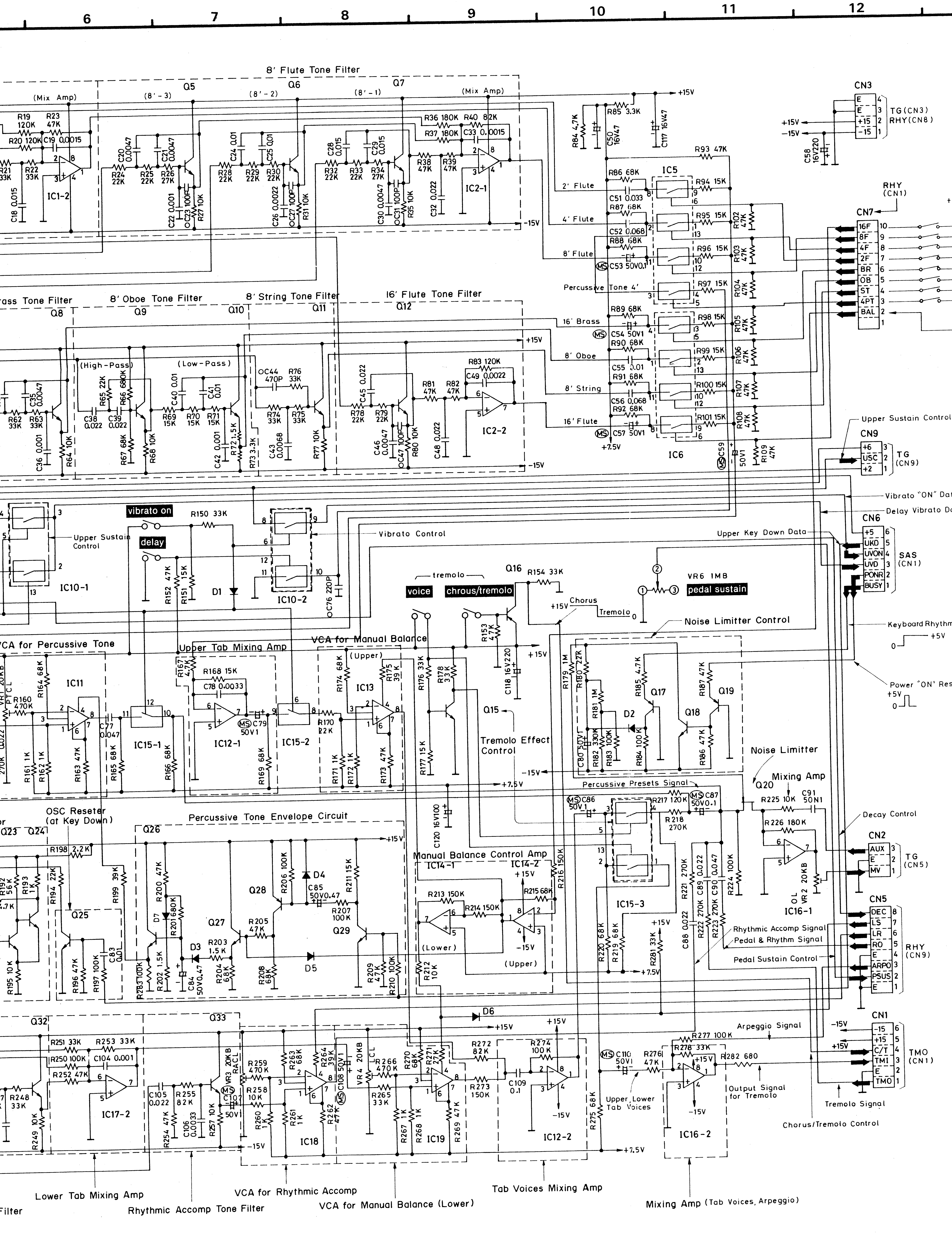
Q1, 5:	2SK30AD
Q2~4, 13, 14:	2SC1328T
Q6:	2SC1328S (Selected)
Q7~12, 15~22:	2SC828AQRS

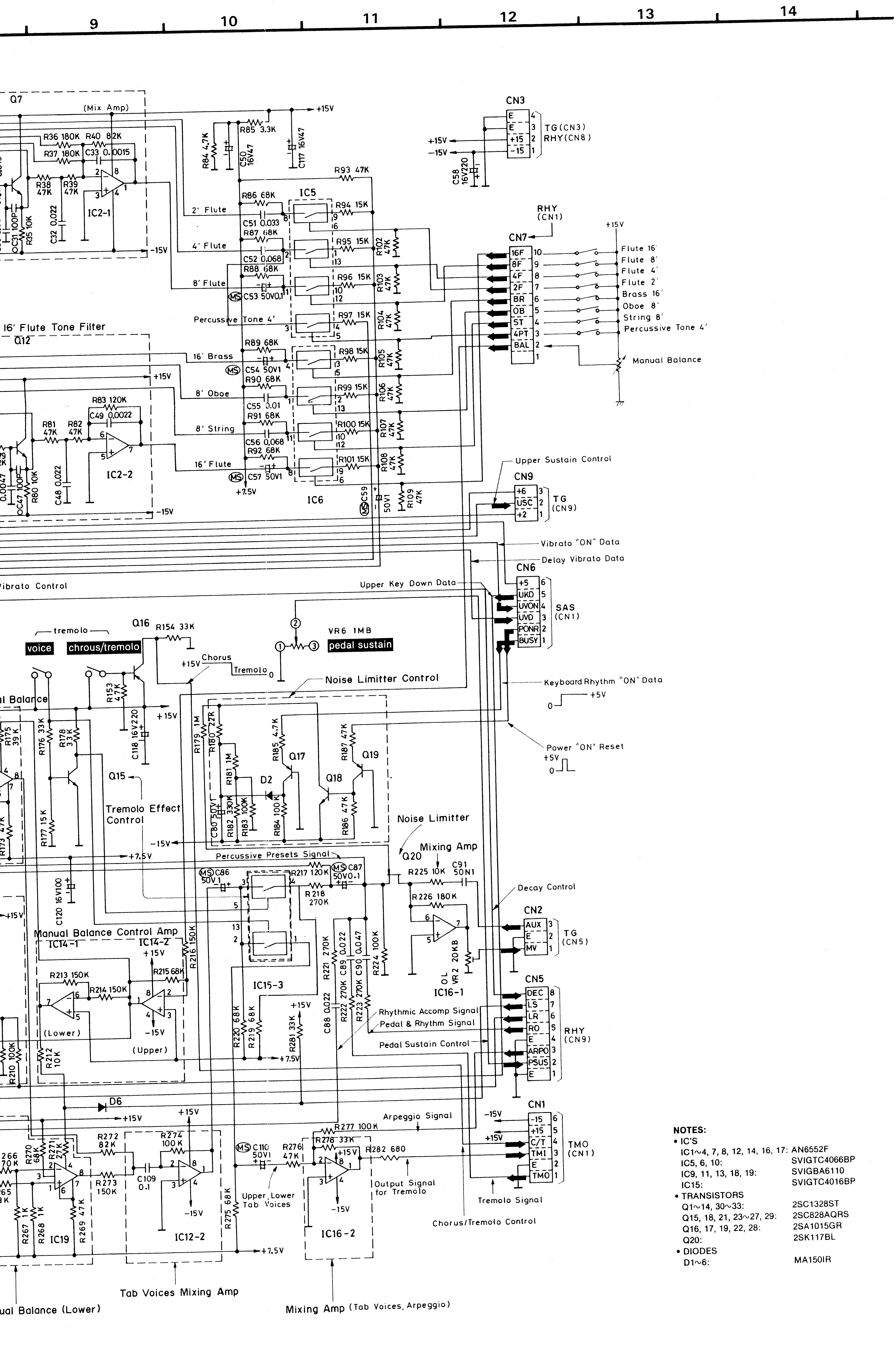
- DIODES

D1~52:	MA150IR

TONE FILTER CIRCUIT DIAGRAM (TF)


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
J
2' Flute Tone Filter
4' Flute Tone Filter
8' Flute Tone
Q1
Q2
Q3
Q4
Q5
Q6
(Amp)
(4' - 3)
(4' - 2)
(4' - 1)
(Mix Amp)
(8' - 3)
(8' - 2)
IC1-1
IC1-2
CN8
TG (CN4)
16
8-3
E
8-2
8-1
4-3
4-2
E
4-1
2
8' Signal Mixing Amp
4' Signal Mixing Amp
2' Mixing Amp for Step Waveform
(8')
(16')
IC3-1
IC3-2
IC4-1
IC4-2
16' Brass Tone Filter
8' Oboe Tone Filter
8' String Tone Filt
Q8
Q9
Q10
Q11
(High-Pass)
(Low-Pass)
Piano Tone Filter
Q13
Q14
Mix Amp
IC7-1
tab voices
piano
harpsichord
vibraphone
Harpsichord Tone Filter
IC8-1
Vibraphone Tone Filter
(VCA)
(Tone Filter)
IC9
IC8-2
Tab 4
VR 5 5KB
Percussive Presets
upper sustain
Upper Sustain Control
IC10-1
vibrato on
delay
IC10-2
D1
VCA for Percussive Tone
Percussive Presets Amp
IC7-2
IC11
IC15-1
Upper Tab Mixing Amp
IC12-1
IC15-2
Vibraphone Oscillator
Q21
Q22
Q23
Q24
OSC Reseter (at Key Down)
Q25
Percussive Tone Envelope Ci
Q26
Q27
Q28
D3
D4
D5
D7
+15V
-15V
+7.5V
Q30
Q31
Q32
Q33
flute
horn
cello
IC17-1
IC17-2
IC18
CN4
TG (CN9)
8N
E
8S
L. Flute Tone Filter
L. Horn Tone Filter
L. Cello Tone Filter
Lower Tab Mixing Amp
Rhythmic Accomp Tone Filter
VCA for Rhythmic

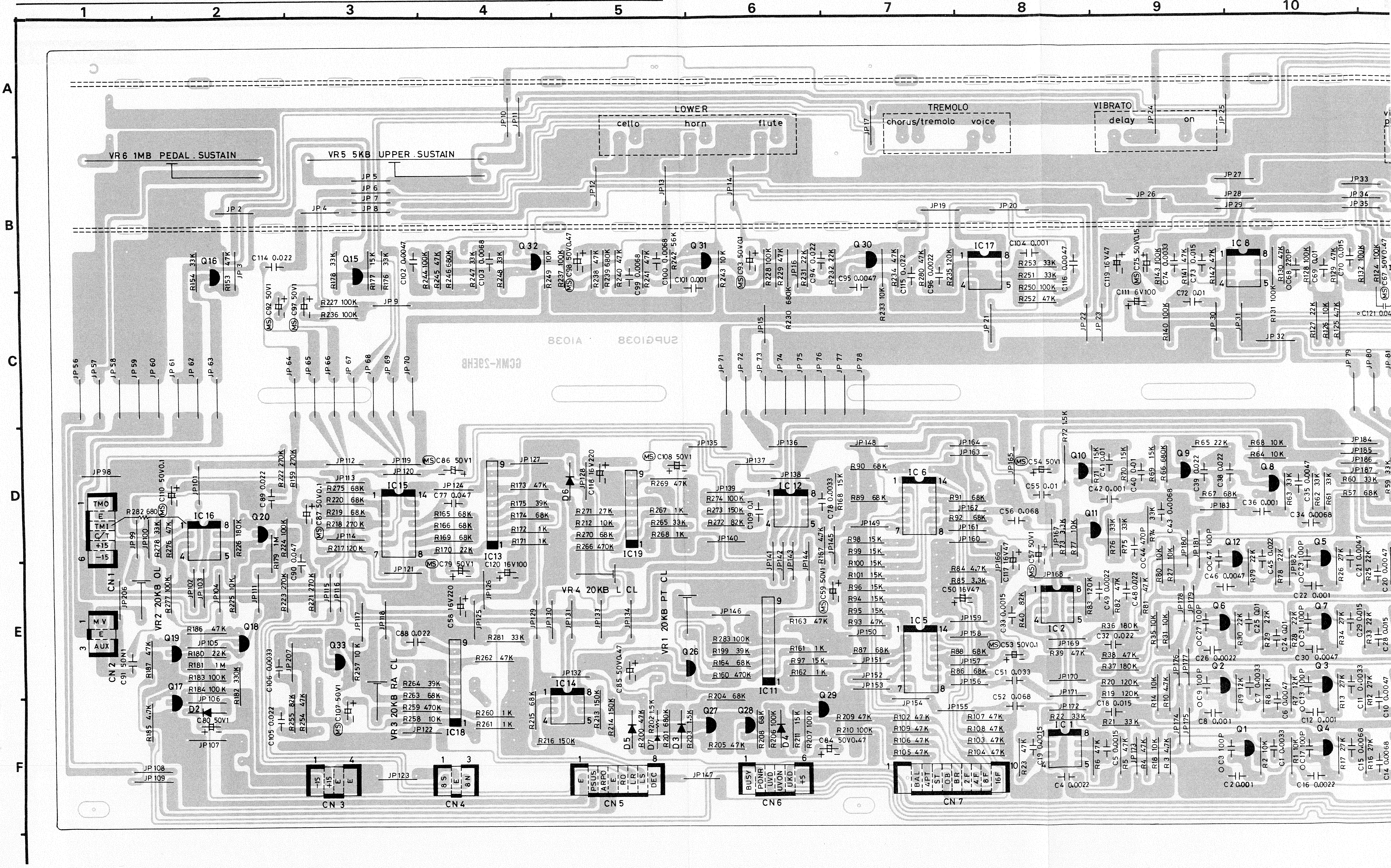

6
7
8
9
10
11
12
8' Flute Tone Filter
(Mix Amp)
(8' - 3)
(8' - 2)
(8' - 1)
(Mix Amp)
Q5
Q6
Q7
IC1-2
IC2-1
+15V
-15V
2' Flute
4' Flute
8' Flute
Percussive Tone 4'
16' Brass
8' Oboe
8' String
16' Flute
IC5
IC6
+7.5V
CN3
TG(CN3)
RHY(CN8)
RHY
(CN1)
CN7
16F
8F
4F
2F
BR
OB
ST
4PT
BAL
rass Tone Filter
8' Oboe Tone Filter
8' String Tone Filter
16' Flute Tone Filter
Q8
Q9
Q10
Q11
Q12
(High-Pass)
(Low-Pass)
IC2-2
Upper Sustain Control
CN9
TG
(CN9)
Vibrato "ON" Dat
Delay Vibrato Da
vibrato on
delay
Upper Sustain Control
Vibrato Control
IC10-1
IC10-2
D1
CN6
Upper Key Down Data
UKD
UVON
UVD
PONR
BUSY
SAS
(CN1)
tremolo
voice
chrous/tremolo
Q16
VR6 1MB
pedal sustain
Chorus
Tremolo
Noise Limitter Control
Keyboard Rhythm
Power "ON" Res
VCA for Percussive Tone
Upper Tab Mixing Amp
VCA for Manual Balance
(Upper)
IC11
IC15-1
IC12-1
IC15-2
IC13
Q15
Tremolo Effect Control
Q17
Q18
Q19
D2
Noise Limitter
Mixing Amp
Q20
Percussive Presets Signal
IC15-3
OSC Reseter (at Key Down)
Percussive Tone Envelope Circuit
Q23
Q24
Q25
Q26
Q27
Q28
Q29
D3
D4
D5
D7
Manual Balance Control Amp
IC14-1
IC14-2
(Lower)
(Upper)
Decay Control
CN2
TG
(CN5)
IC16-1
CN5
DEC
LS
LR
RO
ARPO
PSUS
RHY
(CN9)
Rhythmic Accomp Signal
Pedal & Rhythm Signal
Pedal Sustain Control
Q32
Q33
D6
IC17-2
IC18
IC19
IC12-2
IC16-2
Upper, Lower Tab Voices
Arpeggio Signal
Output Signal for Tremolo
CN1
TMO
(CN1)
Tremolo Signal
Chorus/Tremolo Control
Lower Tab Mixing Amp
Rhythmic Accomp Tone Filter
VCA for Rhythmic Accomp
VCA for Manual Balance (Lower)
Tab Voices Mixing Amp
Mixing Amp (Tab Voices, Arpeggio)
Filter


9
10
11
12
13
14
Q7
(Mix Amp)
+15V
R36 180K
R40 82K
R37 180K
C33 0.0015
R38 47K
R39 47K
IC2-1
C31 100P
R35 10K
C32 0.022
-15V
R84 4.7K
C50 16V47
R85 3.3K
C117 16V47
CN3
E
E
+15
-15
TG (CN3)
RHY (CN8)
C58 16V220
R93 47K
R86 68K
IC5
R94 15K
2' Flute
C51 0.033
R87 68K
R95 15K
4' Flute
C52 0.068
R88 68K
R96 15K
8' Flute
C53 50V0.1
R97 15K
Percussive Tone 4'
R102 47K
R103 47K
R104 47K
RHY (CN1)
CN7
16F
8F
4F
2F
BR
OB
ST
4PT
BAL
Flute 16'
Flute 8'
Flute 4'
Flute 2'
Brass 16'
Oboe 8'
String 8'
Percussive Tone 4'
Manual Balance
16' Flute Tone Filter
Q12
R89 68K
16' Brass
C54 50V1
R98 15K
R105 47K
R90 68K
8' Oboe
R99 15K
R106 47K
C55 0.01
R91 68K
8' String
R100 15K
R107 47K
C56 0.068
R92 68K
16' Flute
R101 15K
R108 47K
C57 50V1
+7.5V
IC6
C59 50V1
R109 47K
R83 120K
C49 0.0022
R81 47K
R82 47K
IC2-2
C47 100P
R80 10K
C48 0.022
Upper Sustain Control
CN9
+6
USC
+2
TG (CN9)
Vibrato "ON" Data
Delay Vibrato Data
Vibrato Control
CN6
Upper Key Down Data
+5
UKD
UVON
UVD
PONR
BUSY
SAS (CN1)
tremolo
voice
chrous/tremolo
Q16
R154 33K
VR6 1MB
pedal sustain
Chorus
Tremolo
Noise Limitter Control
Keyboard Rhythm "ON" Data
Power "ON" Reset
Manual Balance
R153 47K
C118 16V220
R176 33K
R178 33K
R175 39K
Q15
Tremolo Effect Control
R177 15K
R179 1M
R180 22K
R181 1M
R185 4.7K
Q17
R187 47K
Q19
D2
Q18
C80 50V1
R182 330K
R183 100K
R184 100K
R186 47K
Noise Limitter
Mixing Amp
Q20
Percussive Presets Signal
C86 50V1
R217 120K
C87 50V0.1
R218 270K
R225 10K
C91 50N1
R226 180K
Decay Control
C120 16V100
Manual Balance Control Amp
IC14-1
IC14-2
R216 150K
R215 68K
R213 150K
R214 150K
(Lower)
(Upper)
R212 10K
R210 100K
IC15-3
R221 270K
C89 0.022
C90 0.047
R224 100K
CN2
AUX
E
MV
TG (CN5)
VR2 20KB
IC16-1
R222 270K
R223 270K
C88 0.022
R220 68K
R219 68K
R281 33K
Rhythmic Accomp Signal
Pedal & Rhythm Signal
Pedal Sustain Control
CN5
DEC
LS
LR
RO
E
ARPO
PSUS
E
RHY (CN9)
D6
Arpeggio Signal
CN1
-15
+15
C/T
TMI
E
TMO
TMO (CN1)
R272 82K
R274 100K
R273 150K
C109 0.1
C110 50V1
R276 47K
R277 100K
R278 33K
R282 680
R270 68K
R271 27K
R266 270K
R265
R267 1K
R268 1K
R269 47K
R275 68K
IC19
IC12-2
IC16-2
Upper, Lower Tab Voices
Output Signal for Tremolo
Tremolo Signal
Chorus/Tremolo Control
Tab Voices Mixing Amp
Manual Balance (Lower)
Mixing Amp (Tab Voices, Arpeggio)

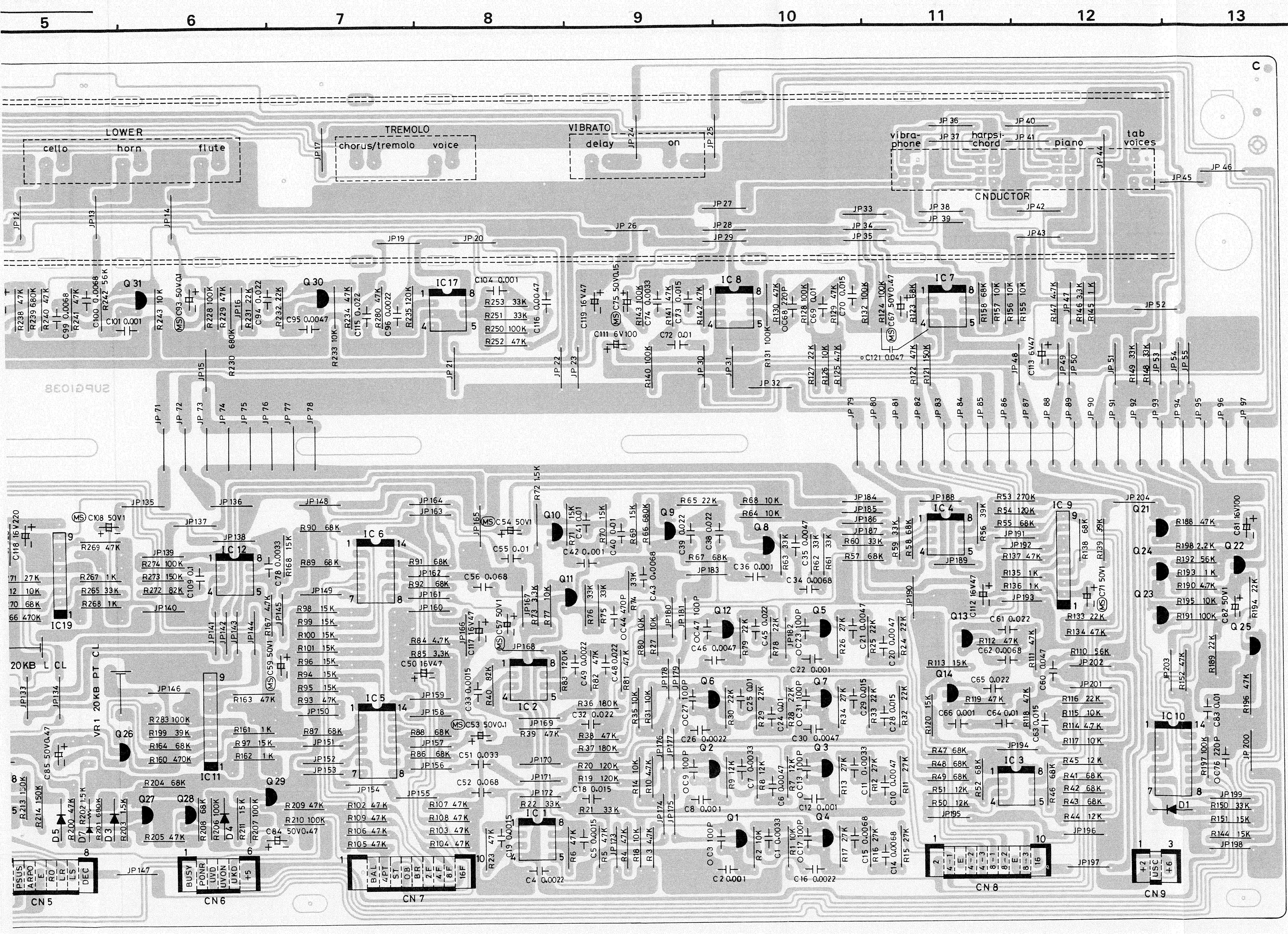
NOTES:

• IC'S	
IC1~4, 7, 8, 12, 14, 16, 17:	AN6552F
IC5, 6, 10:	SVIGTC4066BP
IC9, 11, 13, 18, 19:	SVIGBA6110
IC15:	SVIGTC4016BP
• TRANSISTORS	
Q1~14, 30~33:	2SC1328ST
Q15, 18, 21, 23~27, 29:	2SC828AQRS
Q16, 17, 19, 22, 28:	2SA1015GR
Q20:	2SK117BL
• DIODES	
D1~6:	MA150IR

TONE FILTER CIRCUIT BOARD (TF)

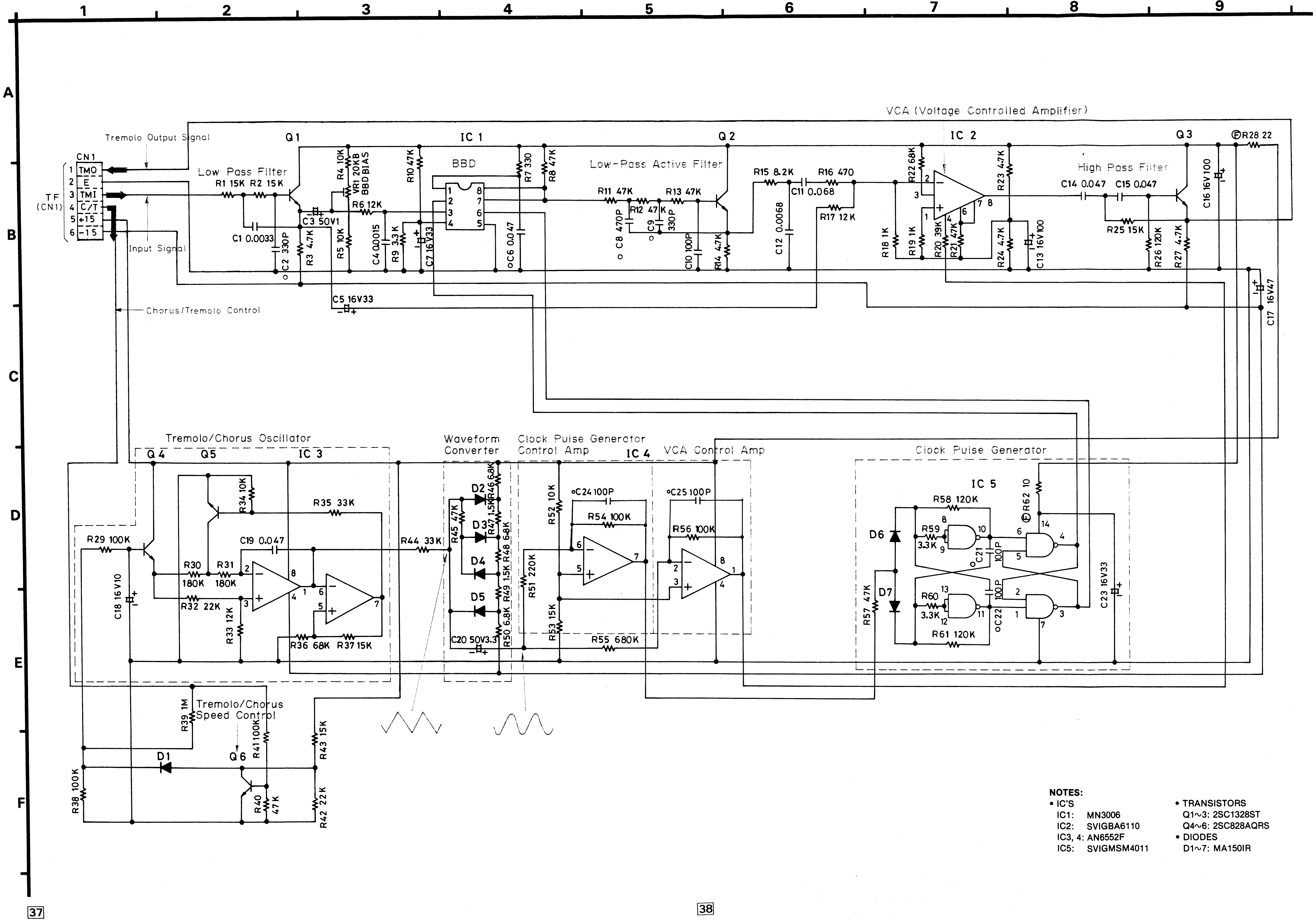

1
2
3
4
5
6
7
8
9
10
A
B
C
D
E
F
LOWER
cello
horn
flute
TREMOLO
chorus/tremolo
voice
VIBRATO
delay
on
VR 6 1MB PEDAL . SUSTAIN
VR 5 5KB UPPER . SUSTAIN
VR 2 20KB OL
VR 3 20KB RA CL
VR 4 20KB L CL
VR 1 20KB PT CL
CN 1
TMO
E
TM1
C/T
+15
-15
CN 2
M V
E
AUX
CN 3
-15
+15
E
E
CN 4
8 S
E
8 N
CN 5
E
PSUS
ARPO
RO
LR
LS
DEC
CN 6
BUSY
PONR
UVD
UVON
UKD
+5
CN 7
BAL
4PT
ST
OB
BR
2F
4F
8F
16F
IC 1
IC 2
IC 5
IC 6
IC 8
IC 11
IC 12
IC 13
IC 14
IC 15
IC 16
IC 17
IC 18
IC 19
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q15
Q16
Q17
Q18
Q19
Q20
Q26
Q27
Q28
Q29
Q30
Q31
Q32
Q33
D2
D3
D4
D5
D6
D7
SUPG1038
A1038
GCMK-29EHB

SXPGA10381


5
6
7
8
9
10
11
12
13
14
C
LOWER
cello
horn
flute
TREMOLO
chorus/tremolo
voice
VIBRATO
delay
on
vibra-phone
harpsi-chord
piano
tab voices
CNDUCTOR
JP 36
JP 37
JP 40
JP 41
JP 44
JP 45
JP 46
JP 38
JP 39
JP 42
JP 43
JP 27
JP 28
JP 29
JP 26
JP 33
JP 34
JP 35
JP 19
JP 20
JP 12
JP 13
JP 14
JP 17
JP 24
JP 25
IC 17
IC 8
IC 7
Q 31
Q 30
JP 52
JP 71
JP 72
JP 73
JP 74
JP 75
JP 76
JP 77
JP 78
JP 79
JP 80
JP 81
JP 82
JP 83
JP 84
JP 85
JP 86
JP 87
JP 88
JP 89
JP 90
JP 91
JP 92
JP 93
JP 94
JP 95
JP 96
JP 97
IC 1
IC 2
IC 3
IC 4
IC 5
IC 6
IC 9
IC 10
IC 11
IC 12
IC19
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q21
Q 22
Q 23
Q24
Q 25
Q 26
Q27
Q28
Q 29
D1
D3
D4
D5
D7
VR1 20KB PT CL
20KB L CL
CN 5
PSUS
ARPO
E
RO
LR
LS
DEC
CN 6
BUSY
PONR
UVD
UVON
UKD
+5
CN 7
BAL
4PT
ST
OB
BR
2F
4F
8F
16F
CN 8
2
4-1
E
4-2
4-3
8-1
8-2
E
8-3
16
CN 9
+2
USC
+6

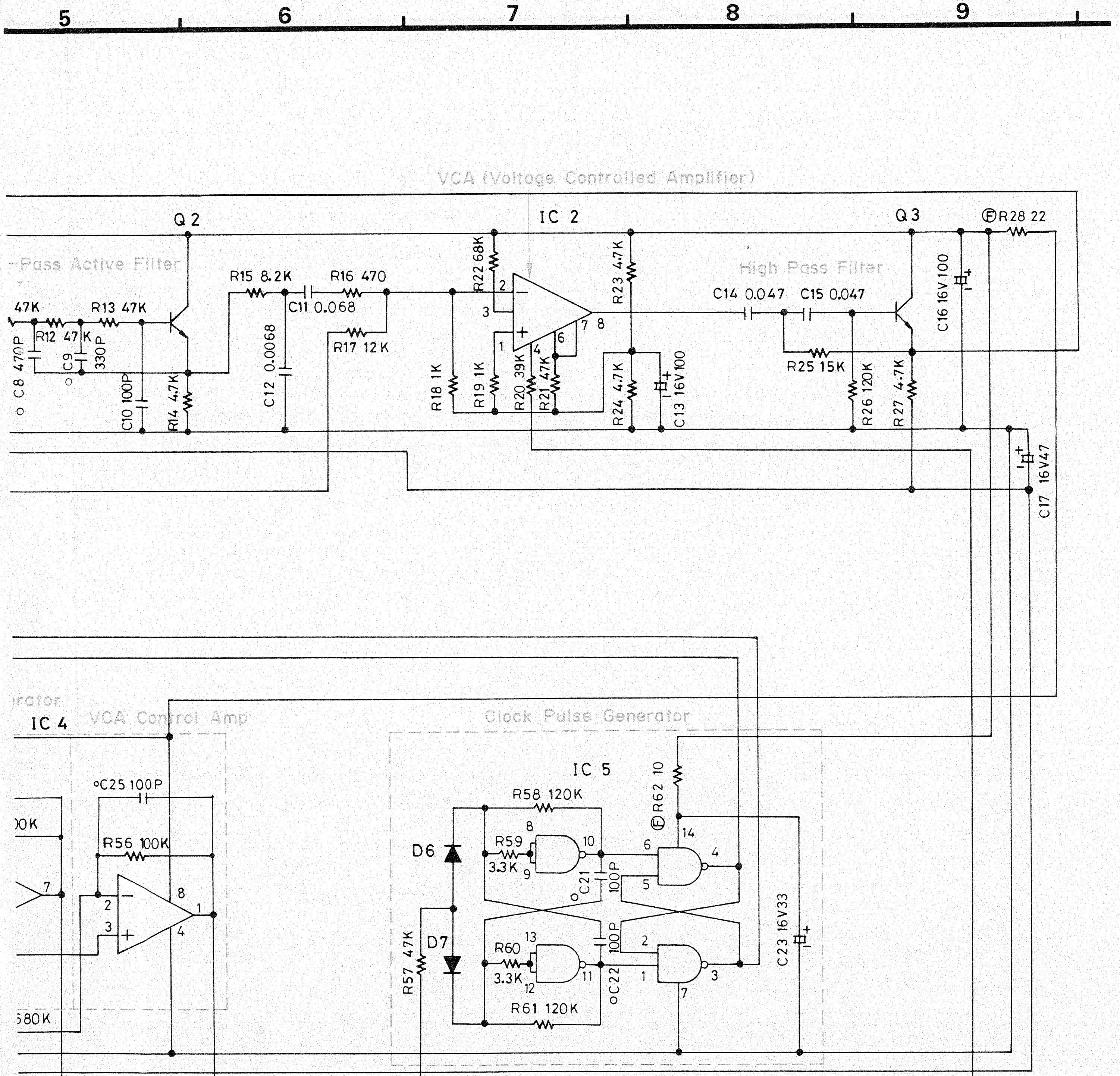
NOTES:
- IC'S
  - IC1~4, 7, 8, 12, 14, 16, 17: AN6552F
  - IC5, 6, 10: SVIGTC4066BP
  - IC9, 11, 13, 18, 19: SVIGBA6110
  - IC15: SVIGTC4016BP
- TRANSISTORS
  - Q1~14, 30~33: 2SC1328ST
  - Q15, 18, 21, 23~27, 29: 2SC828AQRS
  - Q16, 17, 19, 22, 28: 2SA1015GR
  - Q20: 2SK117BL
- DIODES
  - D1~6: MA150IR

MULTI TREMOLO CIRCUIT DIAGRAM (MT)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
Tremolo Output Signal
CN1
TF (CN1)
1 TMO
2 E
3 TMI
4 C/T
5 +15
6 −15
Input Signal
Chorus/Tremolo Control
Low Pass Filter
R1 15K
R2 15K
C1 0.0033
C2 330P
R3 4.7K
Q1
C3 50V1
R4 10K
VR1 20KB BBD BIAS
R5 10K
R6 12K
C4 0.0015
R9 3.3K
C7 16V33
R10 47K
IC 1
BBD
C5 16V33
C6 0.047
R7 330
R8 47K
Low-Pass Active Filter
R11 47K
R12 47K
R13 47K
C8 470P
C9 330P
C10 100P
R14 4.7K
Q2
R15 8.2K
C11 0.068
R16 470
R17 12K
C12 0.0068
VCA (Voltage Controlled Amplifier)
IC 2
R18 1K
R19 1K
R20 39K
R21 47K
R22 68K
R23 4.7K
R24 4.7K
C13 16V100
High Pass Filter
C14 0.047
C15 0.047
R25 15K
R26 120K
R27 4.7K
Q3
C16 16V100
C17 16V47
R28 22
Tremolo/Chorus Oscillator
Q4
Q5
IC 3
R29 100K
C18 16V10
R30 180K
R31 180K
R32 22K
R33 12K
R34 10K
R35 33K
C19 0.047
R36 68K
R37 15K
R44 33K
Waveform Converter
D2
D3
D4
D5
R45 47K
R46 6.8K
R47 1.5K
R48 6.8K
R49 1.5K
R50 6.8K
C20 50V3.3
Clock Pulse Generator Control Amp
IC 4
R51 220K
R52 10K
R53 15K
R54 100K
R55 680K
C24 100P
VCA Control Amp
R56 100K
C25 100P
Clock Pulse Generator
IC 5
R57 47K
D6
D7
R58 120K
R59 3.3K
R60 3.3K
R61 120K
R62 10
C21 100P
C22 100P
C23 16V33
Tremolo/Chorus Speed Control
R39 1M
R41 100K
Q6
D1
R38 100K
R40 47K
R42 22K
R43 15K
37
38
39

NOTES:

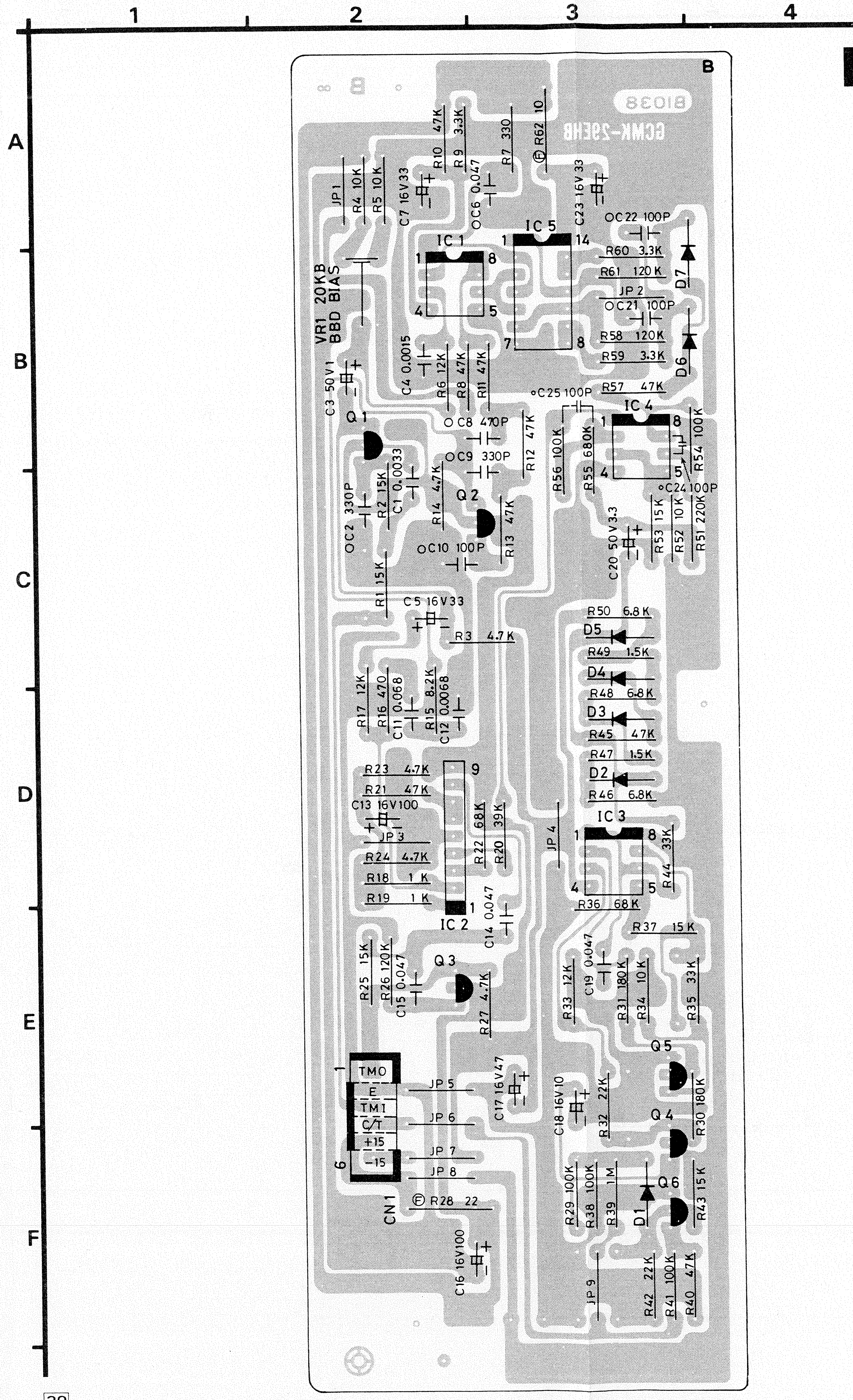
- IC'S
  - IC1: MN3006
  - IC2: SVIGBA6110
  - IC3, 4: AN6552F
  - IC5: SVIGMSM4011
- TRANSISTORS
  - Q1~3: 2SC1328ST
  - Q4~6: 2SC828AQRS
- DIODES
  - D1~7: MA150IR


5
6
7
8
9
VCA (Voltage Controlled Amplifier)
-Pass Active Filter
High Pass Filter
Q2
IC 2
Q3
ⒻR28 22
R15 8.2K
R16 470
C11 0.068
R17 12K
C12 0.0068
R13 47K
R12 47K
47K
C9 330P
C8 470P
C10 100P
R14 4.7K
R22 68K
R18 1K
R19 1K
R20 39K
R21 47K
R23 4.7K
R24 4.7K
C13 16V100
C14 0.047
C15 0.047
R25 15K
R26 120K
R27 4.7K
C16 16V100
C17 16V47
IC 4
VCA Control Amp
Clock Pulse Generator
C25 100P
R56 100K
680K
IC 5
R58 120K
R59 3.3K
R60 3.3K
R61 120K
R57 47K
D6
D7
C21 100P
C22 100P
ⒻR62 10
C23 16V33

NOTES:
- IC'S
  - IC1: MN3006
  - IC2: SVIGBA6110
  - IC3, 4: AN6552F
  - IC5: SVIGMSM4011
- TRANSISTORS
  - Q1~3: 2SC1328ST
  - Q4~6: 2SC828AQRS
- DIODES
  - D1~7: MA150IR

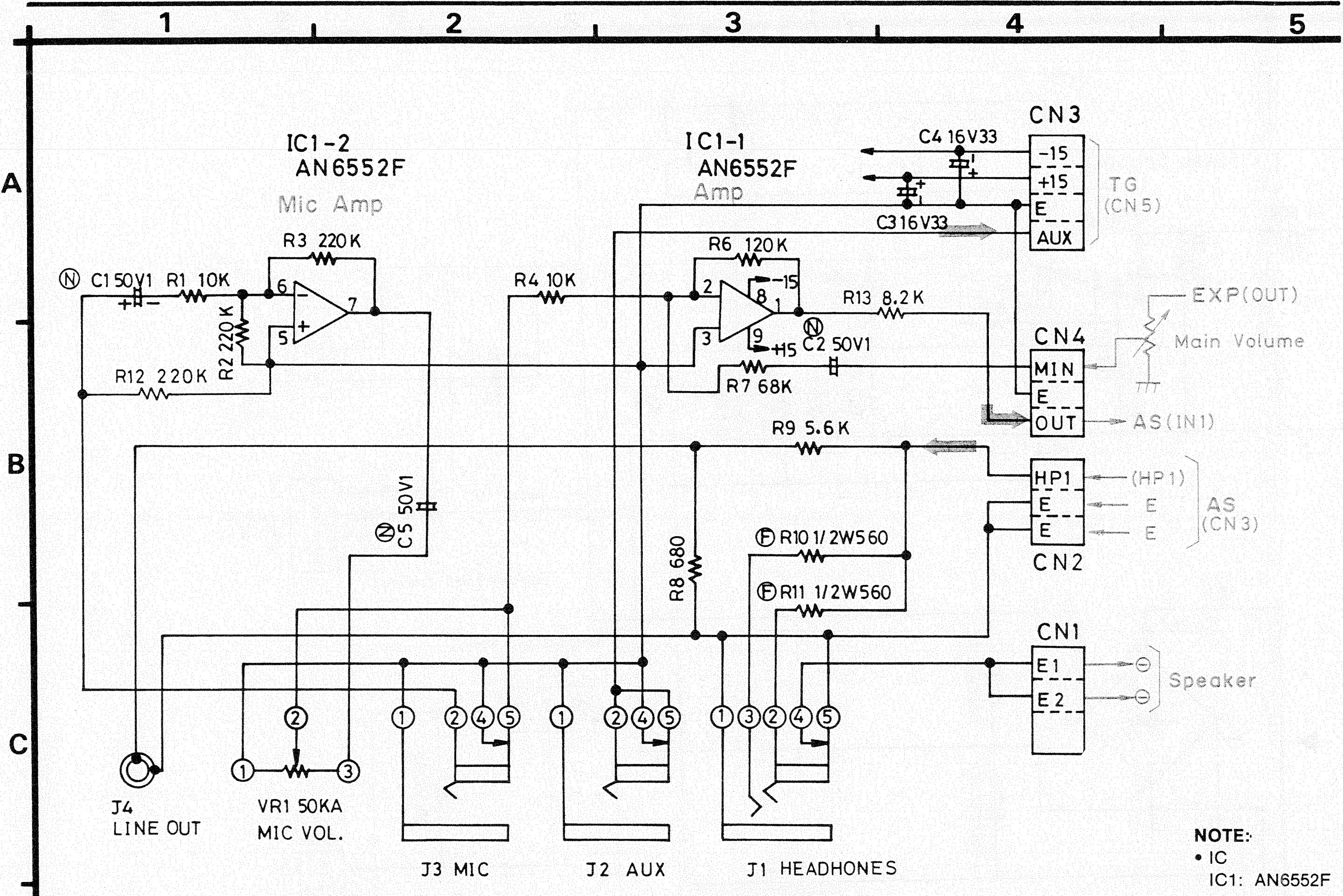
MULTI TREMOLO CIRCUIT BOARD (MT)

SXPGB10381


1
2
3
4
5
A
B
C
D
E
F
B
B1038
GCMK-29EHB
JP1
R4 10K
R5 10K
C7 16V33
R10 47K
R9 3.3K
OC6 0.047
R7 330
ⒻR62 10
C23 16V33
IC 1
IC 5
OC22 100P
R60 3.3K
R61 120K
JP2
OC21 100P
R58 120K
R59 3.3K
D7
D6
VR1 20KB BBD BIAS
C3 50V1
C4 0.0015
R6 12K
R8 47K
R11 47K
C25 100P
R57 47K
IC 4
R54 100K
C24 100P
Q1
OC8 470P
OC9 330P
R12 47K
R56 100K
R55 680K
OC2 330P
R2 15K
C1 0.0033
R14 4.7K
Q2
R13 47K
OC10 100P
C20 50V3.3
R53 15K
R52 10K
R51 220K
R1 15K
C5 16V33
R3 4.7K
R50 6.8K
D5
R49 1.5K
D4
R48 6.8K
D3
R45 47K
R47 1.5K
D2
R46 6.8K
R17 12K
R16 470
C11 0.068
R15 8.2K
C12 0.0068
R23 4.7K
R21 47K
C13 16V100
JP3
R24 4.7K
R18 1K
R19 1K
R22 68K
R20 39K
JP4
IC 2
C14 0.047
IC 3
R44 33K
R36 68K
R37 15K
R25 15K
R26 120K
C15 0.047
Q3
R27 4.7K
R33 12K
C19 0.047
R31 180K
R34 10K
R35 33K
Q5
TMO
E
TM1
C/T
+15
-15
CN1
JP5
JP6
JP7
JP8
C17 16V47
C18 16V10
R32 22K
Q4
R30 180K
ⒻR28 22
R29 100K
R38 100K
R39 1M
D1
Q6
R43 15K
C16 16V100
JP9
R42 22K
R41 100K
R40 47K

NOTES:
- IC'S
  - IC1: MN3006
  - IC2: SVIGBA6110
  - IC3, 4: AN6552F
  - IC5: SVIGMSM4011
- TRANSISTORS
  - Q1~3: 2SC1328ST
  - Q4~6: 2SC828AQRS
- DIODES
  - D1~7: MA150IR

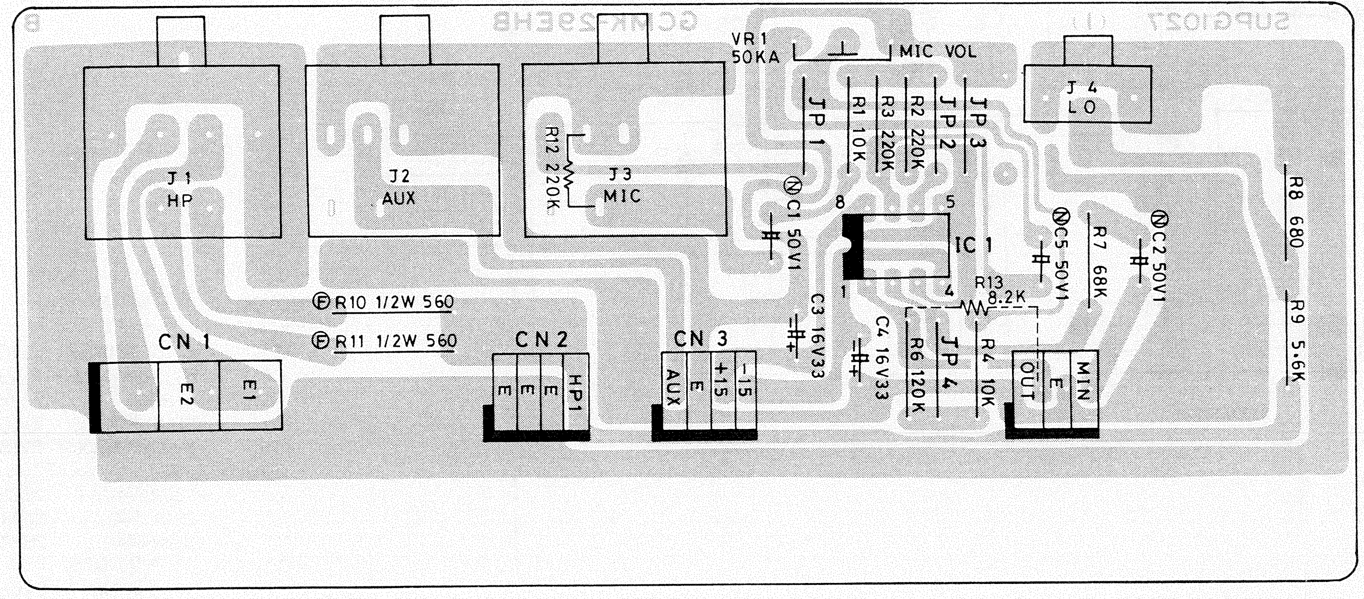
JACK CIRCUIT DIAGRAM (JACK)


1
2
3
4
5
A
B
C
IC1-2
AN6552F
Mic Amp
IC1-1
AN6552F
Amp
C4 16V33
C3 16V33
CN3
-15
+15
E
AUX
TG
(CN5)
R3 220K
Ⓝ C1 50V1
R1 10K
R2 220K
R12 220K
R4 10K
R6 120K
R13 8.2K
Ⓝ C2 50V1
R7 68K
+15
-15
CN4
MIN
E
OUT
EXP(OUT)
Main Volume
AS(IN1)
R9 5.6K
Ⓝ C5 50V1
HP1
E
E
CN2
(HP1)
AS
(CN3)
R8 680
Ⓕ R10 1/2W560
Ⓕ R11 1/2W560
CN1
E1
E2
Speaker
J4
LINE OUT
VR1 50KA
MIC VOL.
J3 MIC
J2 AUX
J1 HEADHONES

NOTE:
- IC
  IC1: AN6552F

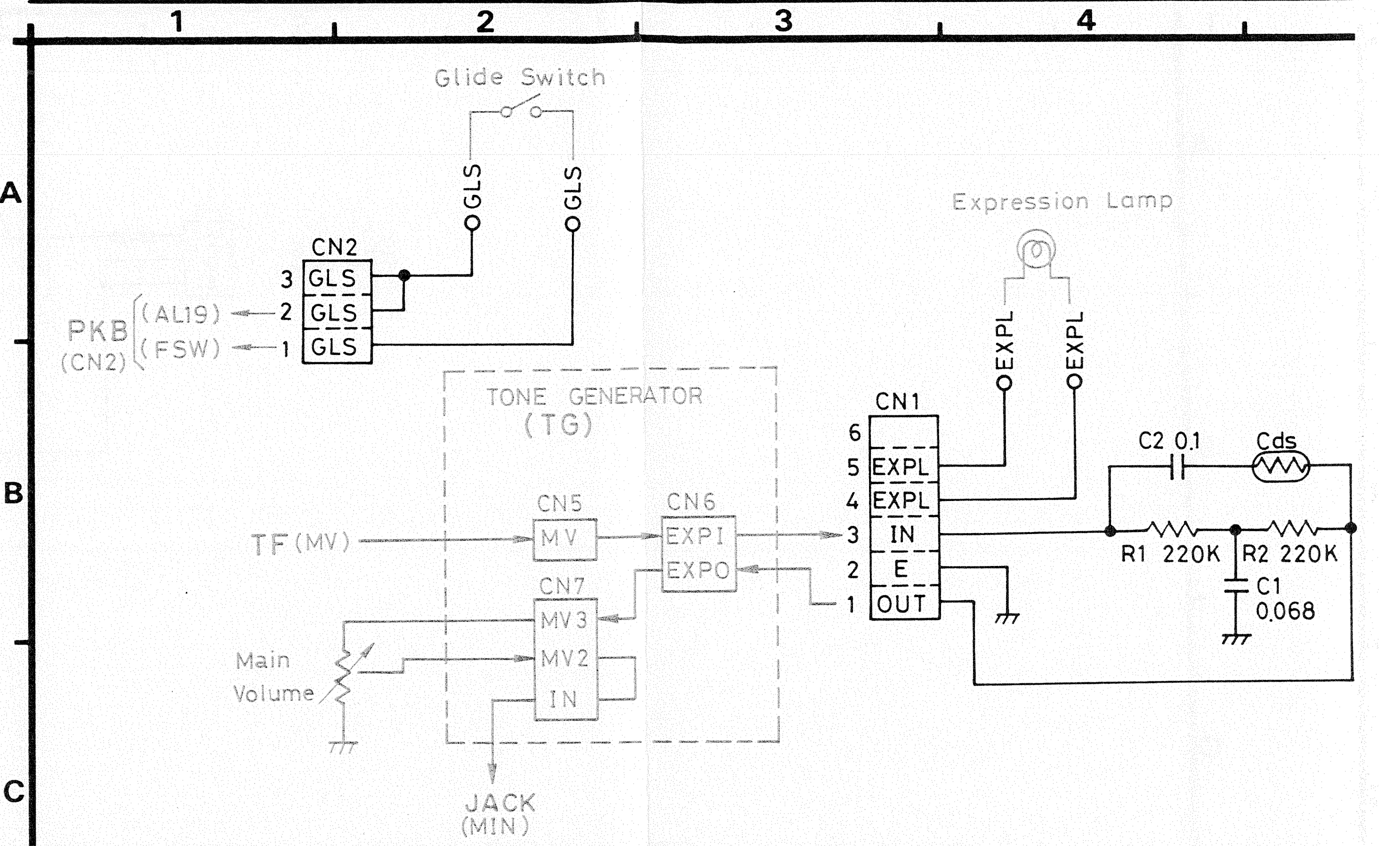
JACK CIRCUIT BOARD (JACK)

SXPG10271


VR1
50KA
MIC VOL
J4
LO
J1
HP
J2
AUX
J3
MIC
R12 220K
JP 1
R1 10K
R3 220K
R2 220K
JP 2
JP 3
R8 680
R9 5.6K
Ⓝ C1 50V1
IC 1
Ⓝ C5 50V1
R7 68K
Ⓝ C2 50V1
R13 8.2K
C3 16V33
C4 16V33
R6 120K
JP 4
R4 10K
Ⓕ R10 1/2W 560
Ⓕ R11 1/2W 560
CN 1
E2
E1
CN 2
E
E
E
HP1
CN 3
AUX
E
+15
-15
OUT
E
MIN
GCMK-29EHB
SUPG1027

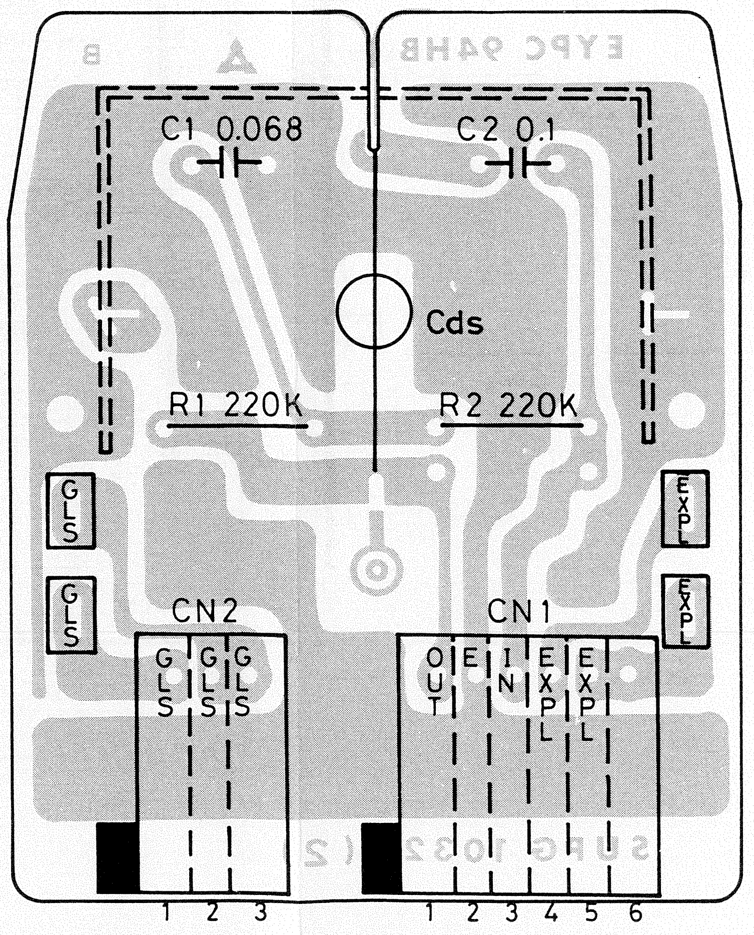
NOTE:
- IC
  IC1: AN6552F

EXPRESSION CIRCUIT DIAGRAM (EXP)

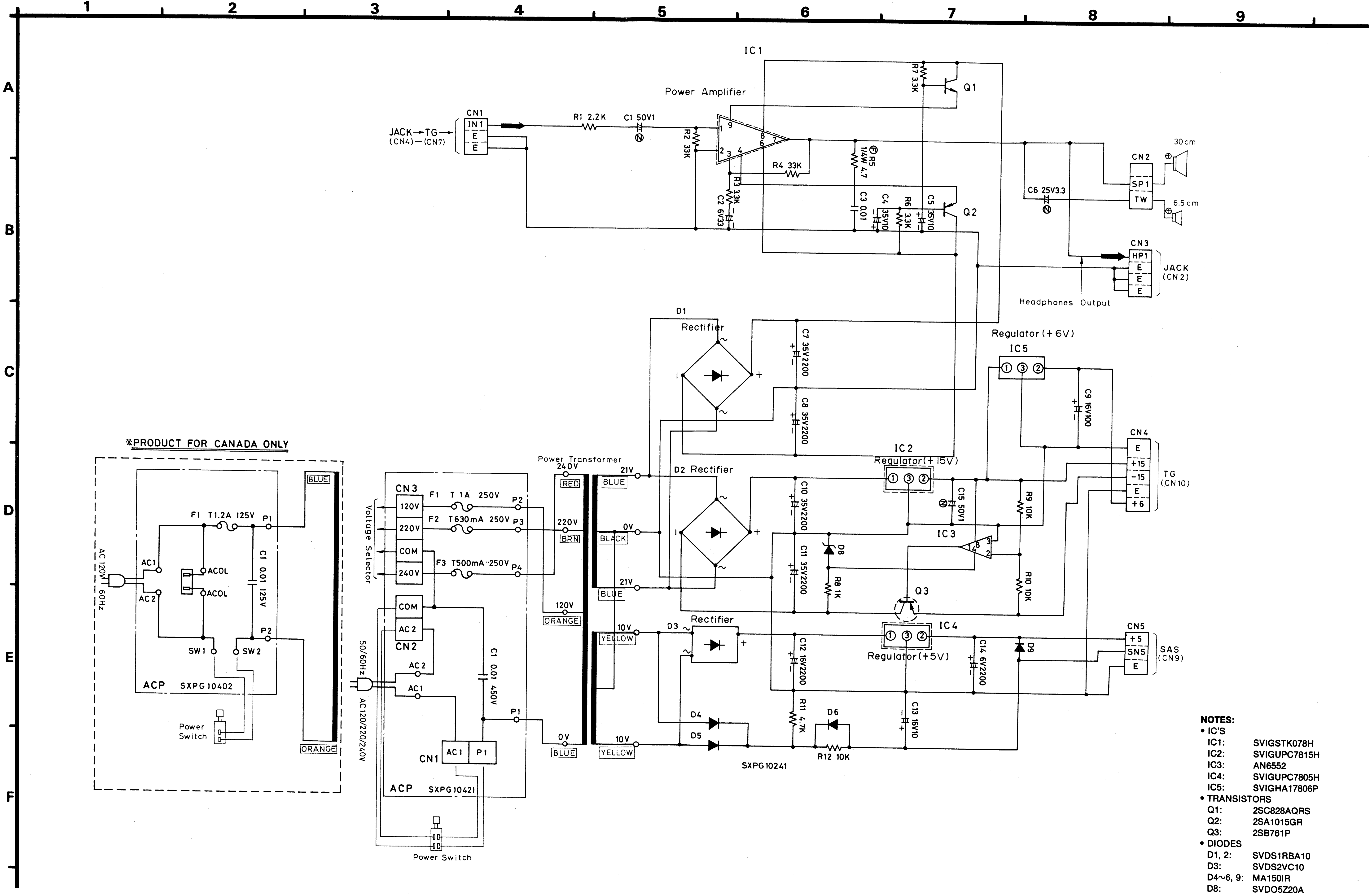

1
2
3
4
A
B
C
Glide Switch
GLS
GLS
CN2
3 GLS
2 GLS
1 GLS
PKB
(CN2)
(AL19)
(FSW)
Expression Lamp
EXPL
EXPL
TONE GENERATOR
(TG)
TF(MV)
CN5
MV
CN6
EXPI
EXPO
CN7
MV3
MV2
IN
Main
Volume
JACK
(MIN)
CN1
6
5 EXPL
4 EXPL
3 IN
2 E
1 OUT
C2 0.1
Cds
R1 220K
R2 220K
C1
0.068

EXPRESSION CIRCUIT BOARD (EXP)

SXPG10324


C1 0.068
C2 0.1
Cds
R1 220K
R2 220K
GLS
GLS
EXPL
EXPL
CN2
GLS
GLS
GLS
CN1
OUT
E
IN
EXPL
EXPL
1 2 3
1 2 3 4 5 6
EYPC 94HB
SUPG1032 (2)

AMP UNIT CIRCUIT DIAGRAM (AS)


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
IC1
Power Amplifier
CN1
IN1
E
E
JACK→TG→
(CN4)—(CN7)
R1 2.2K
C1 50V1
R2 33K
R3 3.3K
R4 33K
C2 6V33
C3 0.01
C4 35V10
R6 3.3K
C5 35V10
Ⓕ R5 1/4W 4.7
R7 3.3K
Q1
Q2
C6 25V3.3
CN2
SP1
TW
30cm
6.5cm
CN3
HP1
E
E
E
JACK (CN2)
Headphones Output
D1
Rectifier
C7 35V2200
C8 35V2200
Regulator (+6V)
IC5
C9 16V100
CN4
E
+15
-15
E
+6
TG (CN10)
IC2
Regulator(+15V)
D2 Rectifier
C10 35V2200
C11 35V2200
D8
R8 1K
C15 50V1
IC3
R9 10K
R10 10K
Q3
IC4
Regulator(+5V)
D3
Rectifier
C12 16V2200
C14 6V2200
D9
CN5
+5
SNS
E
SAS (CN9)
R11 4.7K
D4
D5
D6
R12 10K
C13 16V10
SXPG10241
Power Transformer
240V
RED
220V
BRN
120V
ORANGE
0V
BLUE
21V
BLUE
0V
BLACK
21V
BLUE
10V
YELLOW
10V
YELLOW
CN3
120V
220V
COM
240V
Voltage Selector
F1 T 1A 250V
F2 T630mA 250V
F3 T500mA 250V
P2
P3
P4
COM
AC2
CN2
AC2
AC1
50/60Hz
AC120/220/240V
C1 0.01 450V
P1
CN1
AC1
P1
ACP SXPG10421
Power Switch
※PRODUCT FOR CANADA ONLY
AC 120V 60Hz
AC1
AC2
ACOL
ACOL
F1 T1.2A 125V
P1
C1 0.01 125V
P2
SW1
SW2
ACP SXPG10402
Power Switch
BLUE
ORANGE

NOTES:
- IC'S

IC1:	SVIGSTK078H
IC2:	SVIGUPC7815H
IC3:	AN6552
IC4:	SVIGUPC7805H
IC5:	SVIGHA17806P

- TRANSISTORS

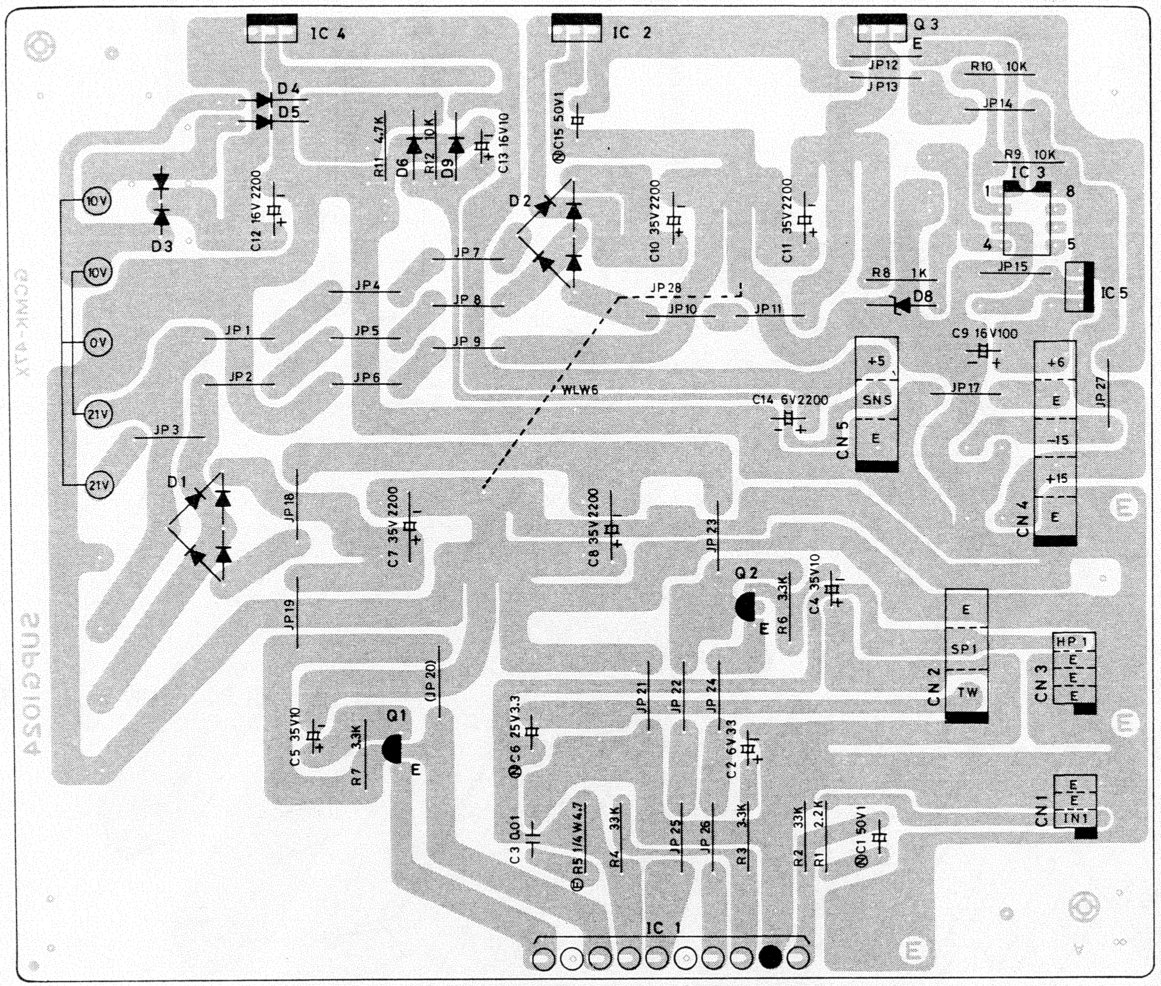
Q1:	2SC828AQRS
Q2:	2SA1015GR
Q3:	2SB761P

- DIODES

D1, 2:	SVDS1RBA10
D3:	SVDS2VC10
D4~6, 9:	MA150IR
D8:	SVDO5Z20A

AMP & POWER SUPPLY CIRCUIT BOARD (AS)

SXPG10241

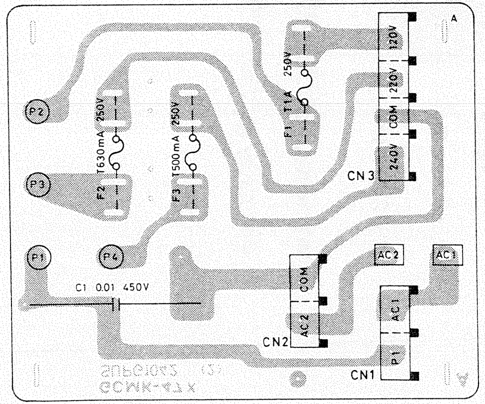

IC 4
IC 2
Q 3
IC 1
IC 3
IC 5
CN 1
CN 2
CN 3
CN 4
CN 5
Q1
Q2
D1
D2
D3
D4
D5
D6
D8
D9
10V
10V
0V
21V
21V
WLW6
SUPG1024
GCMK-47X

NOTES:

- IC'S
  - IC1: SVIGSTK078H
  - IC2: SVIGUPC7815H
  - IC3: AN6552
  - IC4: SVIGUPC7805H
  - IC5: SVIGHA17806P
- TRANSISTORS
  - Q1: 2SC828AQRS
  - Q2: 2SA1015GR
  - Q3: 2SB761P
- DIODES
  - D1, 2: SVDS1RBA10
  - D3: SVDS2VC10
  - D4~6, 9: MA150IR
  - D8: SVDO5Z20A

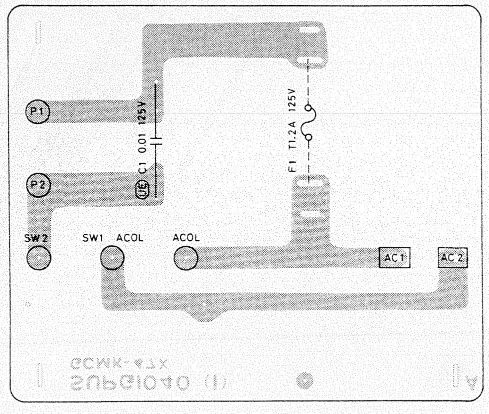
AC POWER CIRCUIT BOARD (ACP)

SXPG10421

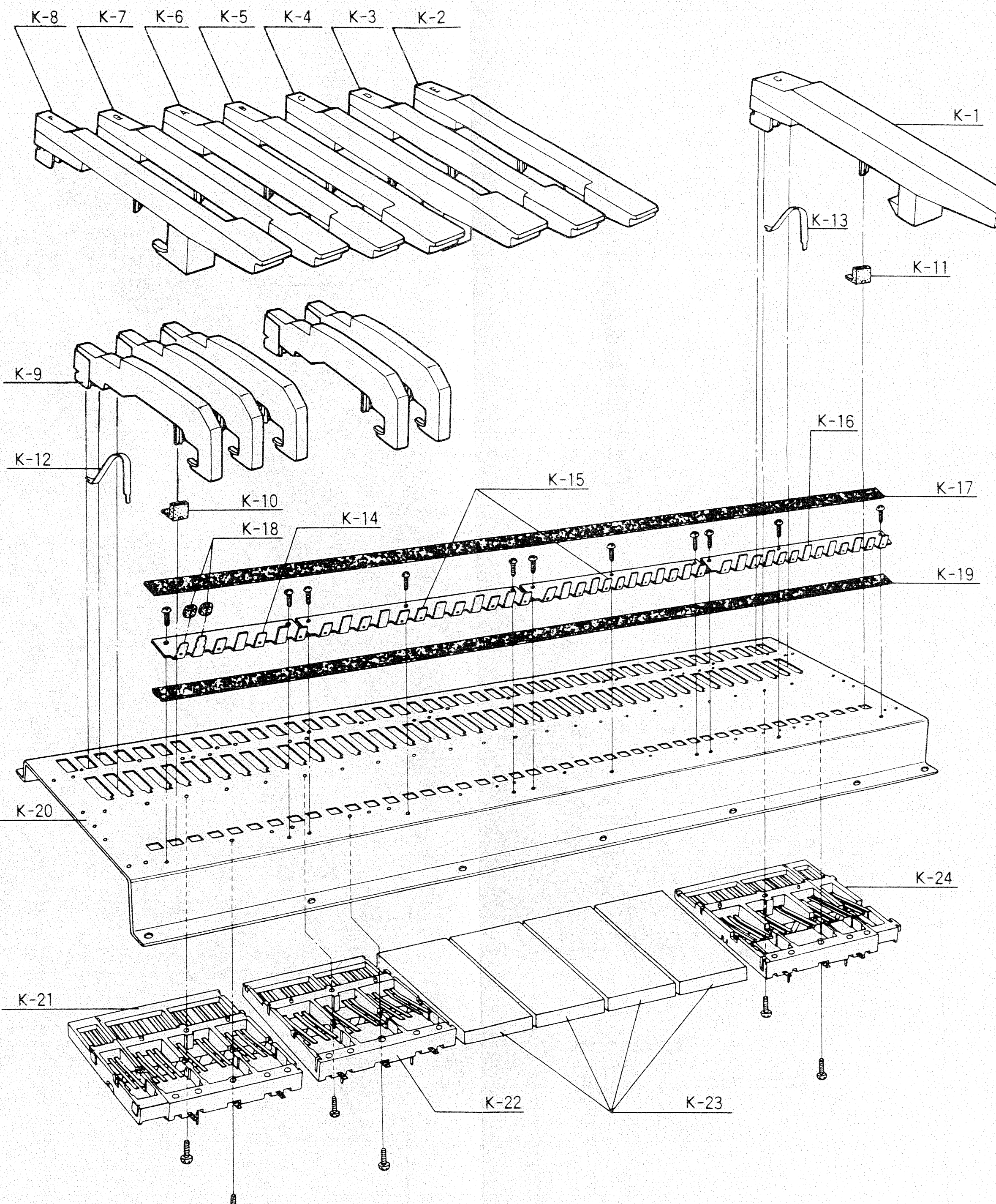

P2
P3
P1
P4
F2 T630mA 250V
F3 T500mA 250V
F1 T1A 250V
120V
220V
COM
240V
CN 3
AC2
AC1
C1 0.01 450V
CN2
CN1
SUPG1042 (3)
GCMK-47X

* Product for Canada Only

SXPG10402

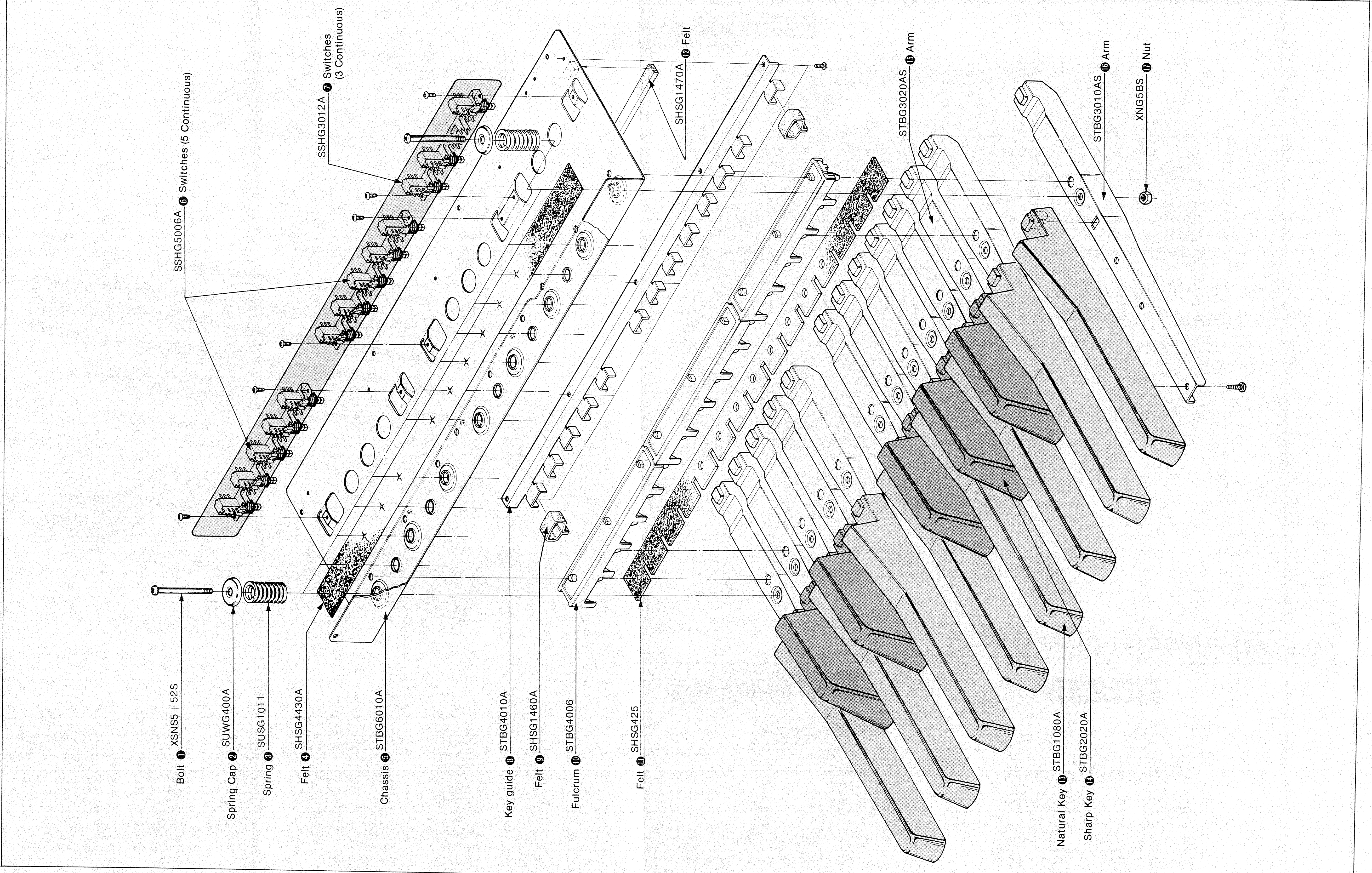

P1
P2
C1 0.01 125V
F1 T1.2A 125V
SW2
SW1
ACOL
ACOL
AC1
AC2
SUPG1040 (1)
GCMK-47X

EXPLODED VIEWS OF MANUAL KEYBOARD


K-8
K-7
K-6
K-5
K-4
K-3
K-2
K-1
K-13
K-11
K-9
K-16
K-12
K-15
K-17
K-10
K-18
K-14
K-19
K-20
K-24
K-21
K-22
K-23

Ref. No.	Part No.	Description	Ref. No.	Part No.	Description
	ESK3219V	Upper Keyboard Assembly	K-14	K30KG74	Key Guide (7 Continuous)
	ESK3220V	Lower Keyboard Assembly	K-15	K30KG73	Key Guide (12 Continuous)
K-1	K30WK61C	Natural Key (Highest C Key)	K-16	K30KG72	Key Guide (13 Continuous)
K-2	K30WK60E	Natural Key (E Key)	K-17	K30DP49B	Felt
K-3	K30WK60D	Natural Key (D Key)	K-18	K30GG1	Key Guide Rubber
K-4	K30WK60C	Natural Key (C Key)	K-19	K30DP77B	Felt
K-5	K30WK60B	Natural Key (B Key)	K-20	K30VCH7	Chassis
K-6	K30WK60A	Natural Key (A Key)	K-21	K30VSU78A	Switch Unit
K-7	K30WK60G	Natural Key (G Key)	K-22	K30VSU79A	Switch Unit
K-8	K30WK60F	Natural Key (F Key)	K-23	K30VSU80A	Switch Unit
K-9	K30BK59	Sharp Key	K-24	K30VSU77A	Switch Unit
K-10, 11	K30AT66	Actuator Rubber			
K-12, 13	K30BN2	Leaf Spring			

EXPLODED VIEWS OF PEDAL KEYBOARD


Bolt ❶ XSN5＋52S
Spring Cap ❷ SUWG400A
Spring ❸ SUSG1011
Felt ❹ SHSG4430A
Chassis ❺ STBG6010A
SSHG5006A ❻ Switches (5 Continuous)
SSHG3012A ❼ Switches (3 Continuous)
Key guide ❽ STBG4010A
Felt ❾ SHSG1460A
Fulcrum ❿ STBG4006
Felt ⓫ SHSG425
SHSG1470A ⓬ Felt
Natural Key ⓭ STBG1080A
Sharp Key ⓮ STBG2020A
STBG3020AS ⓯ Arm
STBG3010AS ⓰ Arm
XNG5BS ⓱ Nut

REPLACEMENT PARTS LIST

■ ELECTRICAL PARTS

○ New Parts

	Part No.	Description	Remarks
		PRINTED CIRCUIT BOARDS	
○	SXPG10351	System Assigner	
○	SXPG10361	Tone Generator	
○	SXPG10371	Rhythm & Pedal	
○	SXPGA10381	Tone Filter	
○	SXPGB10381	Tremolo	
		INTEGRATED CIRCUITS	
	AN6551F	Operational Amplifier	
	AN6552F	Operational Amplifier	
	AN6914	Dual Comparator	
	MN3006	BBD for Audio Signal Delays (128-stage)	
	SVIGTC4001BP	Quadruple 2-Input NOR Gate	
	SVIGTC4013BP	Dual D-Type Flip-Flop	
○	SVIGTC4016BP	Analog Switch	
	SVIGTC40174B	Hex D-Type Flip-Flop	
	SVIGTC4049BP	Hex Inverter	
	SVIGTC4066BP	Analog Switch	
	SVIGM74LS00	Quadruple 2-Input Positive NAND Gate	
	SVIGM74LS04	Hex Inverter	
	SVIGM74LS05	Hex Inverter With Open Collector Output	
	SVIGM74LS08	Quadruple 2-Input Positive AND Gate	
○	SVIGM74LS30	8-Input Positive NAND Gate	
	SVIGM74LS74	Dual D-Type Flip-Flop	
	SVIGM74LS75	4-Bit Bistable Latch	
	SVIGM74LS138	Decoder	
	SVIGM74LS293	4-Bit Binary Counter	
○	SVIGM5L2101A	1024-Bit Static RAM	
	SVIGMC5227	Tone Generator LSI	
	SVIGMSM4011	Quadruple 2-Input NAND Gate	
	SVIGD2316675	16, 384-Bit Mask Programmable ROM	
	SVIGD8049037	1 Chip 8-Bit Micro Computer	
	SVIGBA6110	Voltage Controled Amplifier (VCA)	
	SVIGUPC7805H	Voltage Regulator	
	SVIGUPC7815H	Voltage Regulator	
	SVIGHA17806P	Voltage Regulator	
	SVIGSTK078H	Power IC	

TRANSISTORS

Standard Parts	Production Part
2SC1328-T	2SC828AQRS, 2SC1328ST
2SC1047-C	2SC1047C
2SA1015-Y	2SA1015GR
2SB761-R	2SB761P
2SK30AD	2SK117BL, 2SK30AGR

DIODES

MA162A	MA150IR	Switching
SVDG1SS53		Envelope
SVDS1RBA40	SVDS1RBA10	Rectifier
SVDS2VC10		Rectifier
SM112	SVDG10E1LF	
SVD05Z20A		Zener

	Part No.	Description	Remarks
		COILS, CRYSTAL	
	SVQG43U1598T	Crystal	
	EIS10E301Z	Oscillator Coil	
	RLQZ1231-Z	Rhythm Coil	
		LED'S, LAMP	
	XAMR55P	Expression Lamp	
	SVDGSLR54UTA	LED	
	LN29RP	LED (Power Indicator)	
		CdS	
	SVEG5	Light Sensitive Device	
		SWITCHES	
	ESB70291S	Power Switch	
	ESB70454T	Power Switch (Product for Canada Only)	
	ESE3758	Voltage Selector	
○	SSHG2012AA	Rhythm Start	
○	SSHG6007AA	Walking Bass, Arpeggio, Rhythmic Accomp, Techni-Chord	
○	SSHG7010AA	Auto Play Chord	
○	SSHG8007AA	Rhythm Selector, Rhythm A/B, Fill-In & Intro	
○	SSHG4005AA	Conductor	
	SSHG14	Glide Switch	
○	EST237	Tang Switch (Pedal, Upper)	
○	EST238	Tang Switch (Vibrato, Tremlo, Lower)	
	K30VSU78A	Manual Key Switch Unit [Upper F2~B2 Lower F1~B1]	
	K30VSU79A	Manual Key Switch Unit [Upper F3~B3 Lower C2~F2]	
	K30VSU80A	Manual Key Switch Unit [Upper F#3~F5 Lower F#2~F4]	
	K30VSU77A	Manual Key Switch Unit [Upper F#5~C6 Lower F#4~C5]	
	SSHG5006A	Pedal Switches (5 Continuous)	
	SSHG3012A	Pedal Switches (3 Continuous)	
		VARIABLE RESISTORS	
	EVA1020A24G	20KΩA, Main Volume	
	EVD825B24G	20KΩB, Pedal Volume, Rhythm Volume, Manual Balance	
	EVD925B54G	50KΩB, Rhythm Tempo	
	EVD725B53G	5KΩB, Upper Sustain	
○	EVD1325B16G	1MΩB, Pedal Sustain	
	EVHEVA529A54	50KΩA, Mic Volume	

	Part No.	Description	Remarks
		SEMI-FIXED RESISTORS	
	EVNG0T01B13A	1KΩB	
	EVNG0T01B14A	10KΩB	
	EVNG0T01B24A	20KΩB	
	EVNG0T01B15A	100KΩB	
		BLOCK RESISTORS	
	EXBP88472M	4.7KΩ	
	EXBP88102M	1KΩ	
	EXBP88152M	1.5KΩ	
		CAPACITORS	
	ECNC4A103M	450V, 0.01μF	
	ECQU1A103ME	125V, 0.01μF (Product for Canada Only)	
		JACKS	
	SJJG70A	Headphones Jack	
	SJJG20A	Mic Jack, AUX Jack	
	SJFG30A	Line Out Terminal	
		SPEAKERS	
	EAS30PL79S	30cm Speaker	
	EAS65PH05ST	6.5cm Speaker	
		FUSES	
	XBA2C10TR0	250V, 1A (Time Lag)	
	XBA2C063TR0	250V, 0.63A (Time Lag)	
	XBA2C05TR0	250V, 0.5A (Time Lag)	
	XBA1E12NS5	125V, 1.2A (Product for Canada Only)	
		POWER TRANSFORMERS	
	SLTG5P29		
	SLTG5N18	(Product for Canada Only)	
		AC CORDS, AC OUTLET, PLUG	
	RJA23ZC-K	AC Cord	
	RJA45ZC-K	AC Cord (Product for England and Malaysia Only)	
	SJAG22	AC Cord (Product for Canada Only)	
	SJAG23	AC Cord (Product for Australia Only)	
	SJSA66-2	AC Outlet (Product for Canada Only)	
	SJP5213-1	Plug for AC Cord (Product for Asia Only)	
		ASSEMBLY PARTS	
	SXVG5030A	Expression Pedal Assembly	

■ MECHANICAL PARTS

	Part No.	Description	Remarks
		CABINET	
	SKZG1100A	Sliding Cover	
	SKZG1100B	Sliding Cover (Product for Canada Only)	
	SGXG410A	Ornament Panel for Sliding Cover	
	SKPG110A	Top Cover	
	SKPG110B	Top Cover (Product for Canada Only)	
○	SKGG1D60D	Music Rack	
○	SKGG1E10D	Music Rack (Product for Canada Only)	
	SBHG5003	Hinge for Music Rack	
	SBLG7	Stay for Music Rack	
	SKFG2211A	Rear Panel	
	SKHG5	Handle for Rear Panel	
○	SGWG2101A	Lower Left End Cover Panel	
○	SGWG2101B	Lower Left End Cover Panel (Canada Only)	
○	SGWG3071A	Lower Right End Cover Panel	
○	SGWG3071B	Lower Right End Cover Panel (Canada Only)	
○	SGWG4102A	Upper Left End Cover Panel	
○	SGWG4102B	Upper Left End Cover Panel (Canada Only)	
○	SGWG5061A	Upper Right End Cover Panel	
○	SGWG5061C	Upper Right End Cover Panel (Canada Only)	
○	SGWG1180A	Control Panel	
○	SGWG1180B	Control Panel (Canada Only)	
	SGXG430BS	Ornament Panel for Lower Keyboard	
	SHRG209-1	Foot for Cabinet	
		KNOBS	
	SBNG4010A	Mic Volume	
	SBNG11K	Main Volume	
	SBNG6010G	Slide Volume	
		BUTTONS & LEVERS	
	SBCG20147	Power Switch	
○	B63BT15H	Walking Bass	
○	B63BT15G	Arpeggio, Rhythmic Accomp	
○	B63BT15J	Techni-Chord	
	B63BT16B	(Sky Blue)	
	B63BT16C	(Violet Blue) } Auto Play Chord	
	B63BT16A	(Beige)	
○	B63BT15AD	synchro } Rhythm Start	
○	B63BT15FG	start & stop	
○	B63BT15AA	march	
○	B63BT15EB	swing	
○	B63BT15AB	rock	
○	B63BT15EC	soul	
○	B63BT15AC	bossa nova } Rhythm	
○	B63BT15ED	waltz	
○	B63BT15CE	rhythm A/B	
○	B63BT15C	fill-in & intro	

	Part No.	Description	Remarks
	B63BT16A	tab voices } Conductor	
○	B63BT16G	percussive presets	
	T23VLV2CA	bass 16′	
	T23VLV2CB	bass 8′	
	T23VLV2CC	flute 16′	
	T23VLV2CD	flute 8′	
	T23VLV2CE	flute 4′	
	T23VLV2CG	flute 2′ } Upper Tone Levers	
	T23VLV2EB	brass 16′	
	T23VLV2EC	oboe 8′	
	T23VLV2AB	string 8′	
	T23VLV2DA	sustain	
	T23VLV2CJ	percussive tone 4′	
	T23VLV2BA	on } Vibrato Levers	
	T23VLV2DE	delay	
○	T23VLV2CN	voice } Tremolo Levers	
	T23VLV2FA	chorus/tremolo	
○	T23VLV2CP	flute	
○	T23VLV2EF	horn } Lower Tone Levers	
○	T23VLV2AF	cello	
		MANUAL KEYS	
	K30WK60A	Natural Key (A Key)	
	K30WK60B	Natural Key (B Key)	
	K30WK60C	Natural Key (C Key)	
	K30WK60D	Natural Key (D Key)	
	K30WK60E	Natural Key (E Key)	
	K30WK60F	Natural Key (F Key)	
	K30WK60G	Natural Key (G Key)	
	K30WK61C	Natural Key (Highest Octave C Key)	
	K30BK59	Sharp Key	
		PEDAL KEYS	
	STBG1080A	Natural Key	
	STBG2020A	Sharp Key	
		BENCH	
	SZ-U1		
	SZ-U1NR	(Product for Canada Only)	
	SZ-U1R	(Product for Austraria Only)	
		INSTRUCTION BOOK	
	SQFG2710	Instruction Book (Scandinvian)	
	SQFG2720	Instruction Book (English)	
	SQFG2730	Instruction Book (French)	
	SQFG2740	Instruction Book (German)	

■ WIRING PARTS LIST. (See wiring diagram on page 10, 11)

	Part No.	Description	Remarks
	SWKG136	Connector, With Wire	
	SWKG154	Connector, With Wire	
	SWKG155	Connector, With Wire	
	SWKG164	Connector, With Wire	
	SWKG167	Connector, With Wire	
	SWKG168	Connector, With Wire	
	SWKG169	Connector, With Wire	
	SWKG170	Connector, With Wire	
○	SWKG177	Connector, With Wire	
○	SWKG178	Connector, With Wire	
○	SWKG179	Connector, With Wire	
○	SWKG180	Connector, With Wire	
○	SWKG181	Connector, With Wire	
○	SWKG182	Connector, With Wire	
○	SWKG183	Connector, With Wire	
○	SWKG184	Connector, With Wire	
○	SWKG186	Connector, With Wire	
○	SWKG187	Connector, With Wire	
○	SWKG188	Connector, With Wire	
○	SWKG189	Connector, With Wire	
○	SWKG190	Connector, With Wire	
○	SWKG191	Connector, With Wire	
○	SWKG192	Connector, With Wire	
○	SWKG193	Connector, With Wire	